May 2001
Volume 69 No 5

Amateur Radio

WIRELESS INSTITUTE OF AUSTRALIA

The ULTIMATE Antenna Mast

Regular Columns

'Is there a future for WIA?'

Opinion: Martin Luther VK5GN

Unlikely Projects — Charlie's Toys: NO 2. DC/DC Converter

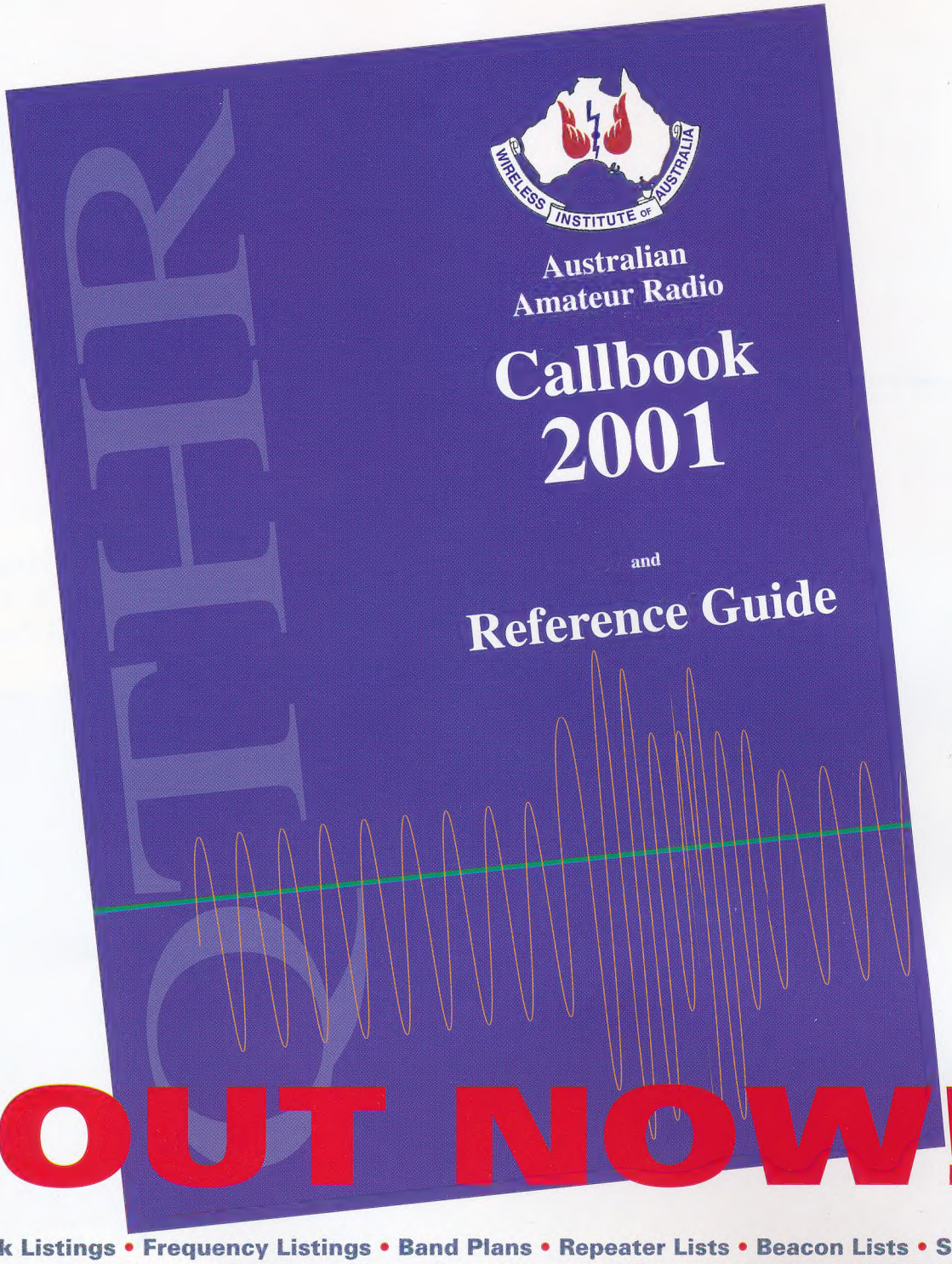
'Kit Workers'

- An RF-actuated CW Monitor and Practice Oscillator
  Drew Diamond, VK3XU
- Satellite Tracking Antenna

The history of **Packet Radio** in Australia

Novice Notes: More Crystal Sets

Technical Abstracts: •Pseudo Stereo CW Reception •Preamp Supplys Current Limiter •CAT Interface •Optoislolated Icom CI-V Bus Interface



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Our cover this month

Kit building activity at the Summerland Amateur Radio Club recently

Contributions to Amateur Radio
Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Editorial Comment

Colwyn Low VK5UE

The Federal Convention has come and gone...

The baton has been passed and we have four new Directors, Ernie Hocking VK1LK President, David Pilley VK2AYD, Brenda Edmonds VK3KT and Don Wilschefski VK4BY. This provides a good regional coverage and the ability to spread the load. All the co-ordinators were re-appointed but there are three vacancies Contests, WICEN and Intruder Watch. Peter Naish is now Federal Secretary. We thank Peter for being President over several trying years and more recently carrying a disproportionate share of the responsibility and work of the Federal WIA. Thank you Peter.

The new Directors bring a variety of talent and experience and we wish them well in their new positions. We need to do some bridge building between the Directors and the ordinary members, for no matter what the legal set up is, the ordinary members pay the memberships, which keep the WIA afloat at all levels. It is not enough to say the Directors are only responsible to the shareholders, the Divisions. A National Society cannot run and attract members with this separation between the rank and file and the Executive. I hope to publish a fuller report on the Federal WIA Convention in the June AR.

The Convention has asked that AR appear earlier in the month, now while I consider this an academic question, the production house and I have been working towards this, slowly. One major cause of delay is lack of material. Now that I have some articles in hand I can plan content for several months ahead and the production house can work on more than one issue at a time. So I still need material. How about something on ATV ? I also need good evenly lit contrasty photographs for the cover. People activities with people predominant and equipment are popular subjects. This months cover appeared very late in April and was the chosen because of the subject (people and activity) and the contrast range. I have some good Convention photos for June but I need a good Remembrance Day subject for the RD Contest and ALARA has promised a cover to go with the ALARA Contest new date 25/26 August.

Other than that I have only been able to make four contacts in this year's Harry Angle Sprint. The Adelaide Hills ARS have decided not to have the Australian Sprints this year due to lack of interest. JOTA is 20/21st October this year and WICEN across the country is supporting many sporting activities with people, horses, bicycles and cars. Drew Diamond VK3XU has published Vol 2 of of his practical projects book, I hope to publish a review next month Contact Drew for a copy about $20.

Finally Amateur Radio frequency allocations are continually under pressure these days especially the UHF bands. It is hard to justify keeping them if we do not use them. My local 70cm repeater would be lucky if it got used 30 minutes a day !!!!!!! If we do not have a strong WIA with membership in excess of half the Amateur population to negotiate with the ACA we will be walked over. Who would organise the individual Amateurs if we did not have a WIA?

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of March 2001

L21185	MR A BALLANTINE	VK3DJM	MR J H MILLER
L21186	MR G B WOODWARD	VK4OC	MR D S A PEAKE
L21187	MR M FAED	VK7ZAC	MR A CORDWELL
L60XXX	MR R C W JUNCKERSTORFF	VK8GW	MR G T WOODS
VK2HUP	MR J FEGAN		

Opinion

Is there a future for WIA?

Martin Luther VK5GN

Five Basic Principles on which change in the WIA should be based

Since I wrote my original paper on reforming the WIA I have had interesting discussions with many radio amateurs regarding the proposed organisation. In the course of these debates it has become clear that there are a few basic principles which underlie everything we are trying to achieve. We may argue about this or that detail. We may argue about why and how we arrived at our present state.

However, for those of us who believe there is a better way then these fundamental principles seem to provide a good starting point.

Members to "own" the organisation

The essence of most re-organisations lies in getting responsibility, authority and power (with accountability) aligned so as to achieve the goals of the organisation.

The Federal/National office holders must have the power and authority to carry out their responsibilities. They do not have that at present and any change to the present organisation that does not correct the situation will fail, and will be seen by members as merely "window dressing".

All power comes from the members. In the present organisation that power has been taken by the state divisions and wielded in a way that still holds the federal executive responsible but denies them the authority and power to carry out that responsibility. The crude way in which the power derived from a large grouping of members in VK2 and VK3 has been used with threats of withdrawal and legal action is only the gross surface evidence of a deep rooted failure in the structure of the present organisation.

That is a grand way of saying that without the members becoming the owners of the Federal/National body and voting directly for their representatives and officers there will be no real change.

In that way the Federal/National officers take their power directly from the members. They will answer to the membership not a small elite of divisional officers. Once elected they will have the authority and power to carry out their responsibilities. They will be seen by the membership at large as responsible and accountable.

The change must be "significant"

Over the past few decades attempts have been made to dress up the present organisational structure as relevant and effective. They have all failed to convince the membership and amateur radio operators at large. Membership has continued to decline.

Those failures now make it imperative that the change carried out now is seen as a major change in direction.

It should be a complete break from the past

If it is not, if all that happens is a minor re- adjustment, then it will fail to motivate the Amateur Radio operators of Australia to give their support to a reinvigorated WIA.

Services are important but, in general, do not motivate people to join

The WIA has sold itself for many years on the provision of services, magazine, QSL bureaus, in some states repeaters, in some states packet networks etc. The officers of the WIA, including myself, have been consistently frustrated by the apparent indifference to our efforts.

Members say they are important but despite this there appears to be no correlation between more and better services and increased membership percentages.

I have now formed the view that services for the WIA are like management hygiene factors. An absence of services will cause people to leave. However, many good services will not cause people to join or stay!

There must be other significant factors at work causing people to join, leave or stay.

Put Amateur Radio back into the WIA

My thanks to many correspondents and also members attending the March VK5 WIA general meeting for helping to focus ideas in this area.

The glue that holds us together is amateur radio. Without amateur radio there would be no WIA and no need for the WIA. Yet the WIA as an organisation seems to have forgotten this.

I alluded to this in my original paper when I spoke about the movement of Amateur Radio meetings and activities from the WIA divisional meetings to the local radio club and the changing character of the WIA that resulted. I am now convinced this has gone too far into concentration on administration or what has been described to me as "the business of amateur radio". Look through the minutes of WIA meetings from the national convention on down and they are all about administration. What happened to Amateur Radio?

Continued on page 16

An RF-actuated CW Monitor and Practice Oscillator

Drew Diamond, VK3XU,
45 Gatters Rd.,
Wonga Park, 3115.

When sending CW Morse by hand-key, an ability to hear the dots and dashes as they are made is a highly desirable feature. And when using an electronic keyer, or 'bug' key- a side-tone monitor is essential. If separate transmitter and receiver are used, then the receiver (assuming that it is not overloaded) provides an ideal sending and signal-quality monitor.

It seems that most operators now prefer 'transceive' action, where the receiver is muted, or silenced during transmit, in which case a separate side-tone monitor, or oscillator, is required when sending Morse. However, for many of the transmitter circuits we see in radio journals, the designer, in an attempt to simplify the project may not have included a side-tone monitor for CW (I'm guilty here), and leaves the provision of monitoring to the cleverness of the individual builder.

One traditional fix is to have a simple RF-actuated monitor right there near the operating position. Whenever a signal is put to air, the monitor 'beeps' in response to the key(er). But I find that the simpler RF-actuated and powered monitors have two serious drawbacks; they are rather 'deaf', in that a fairly high-powered (more than about 10 W on HF) is required to make the device respond, and secondly, the tone obtained rather depends on the vagaries of the received signal strength, sometimes resulting in a chirpy and unpleasant note. A more ideal monitor would respond to the 'RF in the shack', even from a QRP transmitter, and emit a pleasant sounding tone, free of chirps, clicks and squarks.

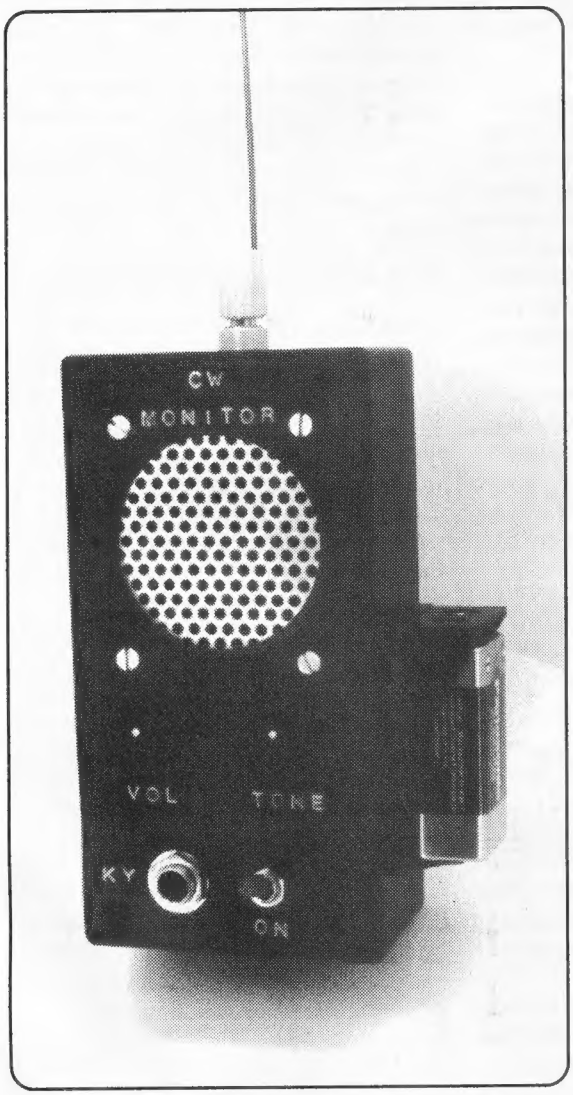


Photo 1

Here is a monitor which can detect the field from an elevated dipole at power levels as low as about 2 W between 1.8 and 50 MHz. There is only a very small 'grey-area' where erratic operation is obtained. That is, the device either gives a good clear note when there is sufficient signal, or no note where the signal is too small. The tone frequency may be varied from about 700 to 1500 Hz as desired. A short pick-up wire or rod of only about 300 mm is required.

Circuit

See Fig. 1. An ordinary NE-555 timer chip is wired as an astable oscillator. The timing components, mainly the 100k tone pot and 10 n capacitor determine the oscillation frequency. 10 n capacitors are connected between -ve rail (chassis ground) and the output pin 3, and Vc pin 5 to discourage false triggering of the chip. The '555 will not oscillate unless reset pin 4 is allowed to go 'high' when transistor Q3 is turned off. When no signal is present, Q3 is biased on via the 100k resistor, thus holding pin 4 'low'.

In order to respond to energy from a QRP transmitter, a substantial amount of RF gain is required, which is provided by broad-band amplifier Q1, a dual-gate FET. Drain current is supplied via a 100 microhenry radio frequency choke (R.F.C.), which allows the stage to develop considerable gain throughout HF, yet has less gain at MF broadcast frequencies, thus discouraging false triggering from local BC transmitters.

Signal at the drain of Q1 is applied to a voltage doubler detector comprised of a pair of germanium diodes. When the detected d.c. signal is sufficiently strong, Q2 will turn on, which turns off Q3, thus allowing the '555 to oscillate. For use as a Morse practice oscillator, base of Q3 is pulled low at key closure, thus turning off Q3.

Construction

The monitor may be housed in a metal or plastic case. That shown is a black plastic 'zippy' box measuring 130 x 68 x 44 mm available from Jaycar, DSE and others. A rectangle of single-sided circuit board accommodates the bulk of the components 'Paddyboard' style (Ref. 2). A suggested layout is shown in Fig. 2.

The circuit is not particularly critical, so any fabrication method that you prefer, even 'ugly' or 'dead-bug' should work

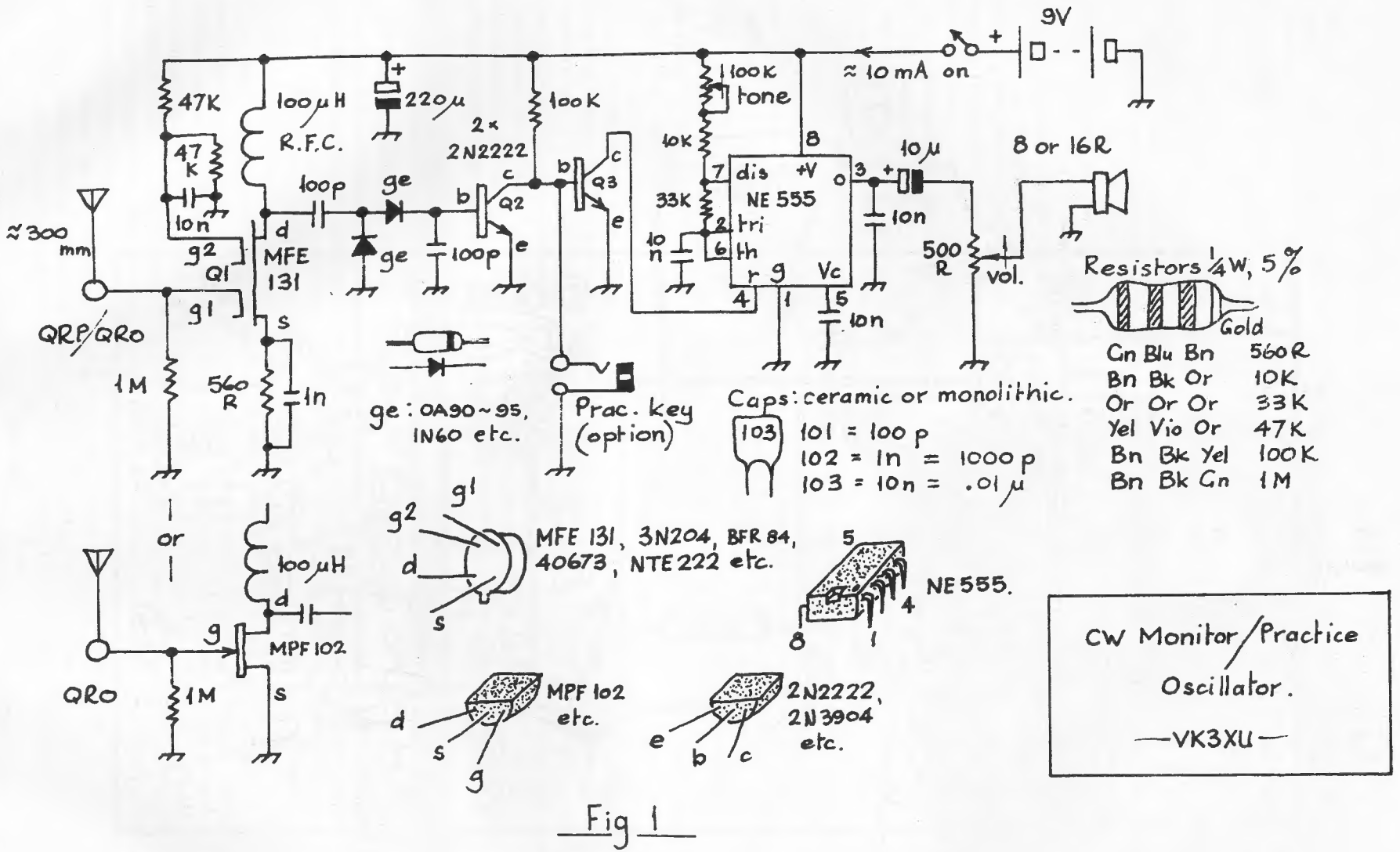


Fig 1

Figure 1

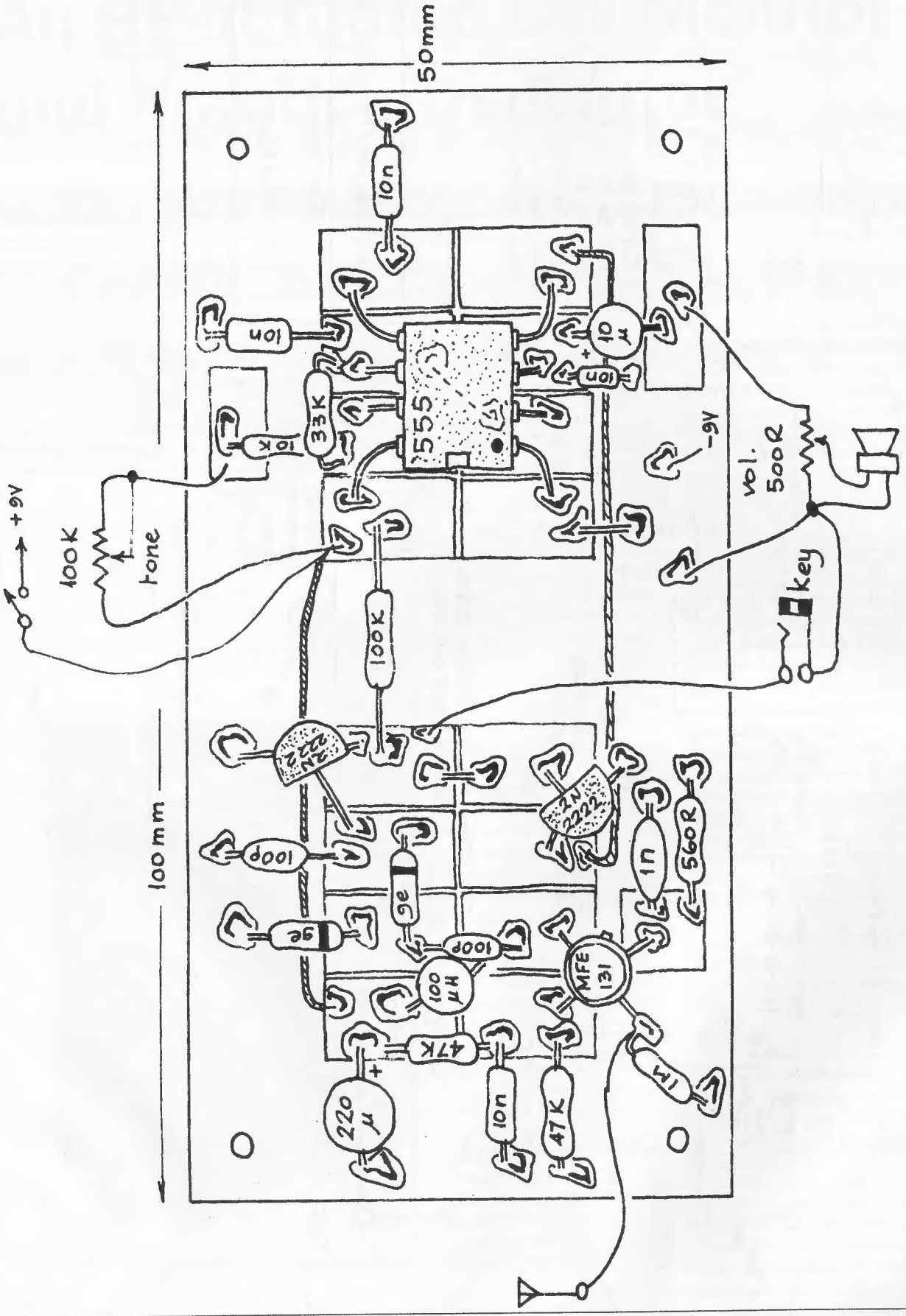


Fig. 2

Figure 2

satisfactorily, provided that component leads are reasonably short. It is suggested that the '555 be fitted into an I.C. socket with fine tinned leads soldered to each pin, which in turn is soldered upon a paddyboard substrate, then super-glued to the main board. The substrate is made from a rectangle of single-sided board with lands produced with a junior hack-saw as described in Ref. 2. The connection between pins 2 and 6 is made under the '555 socket (shown dotted in Fig. 2). To reduce capacitive loading of the input signal, note that g1 of Q1 does not attach to a pad, but is wired ugly style to the 1 M resistor, and to the pick-up terminal/binding post atop the box. Use your long-nose pliers as heatsink-between part and solder when fitting the germanium diodes (hot-carrier diodes will also serve).

If the monitor will only be used with fairly high power transmissions, then an ordinary (and cheaper) MPF 102 may be used as RF amplifier. The alternative amplifier is shown on the circuit in Fig. 1.

Current demand from the 9 V 'transistor' battery is about 10 mA. The battery may be fitted inside (with difficulty) or outside the box- as desired.

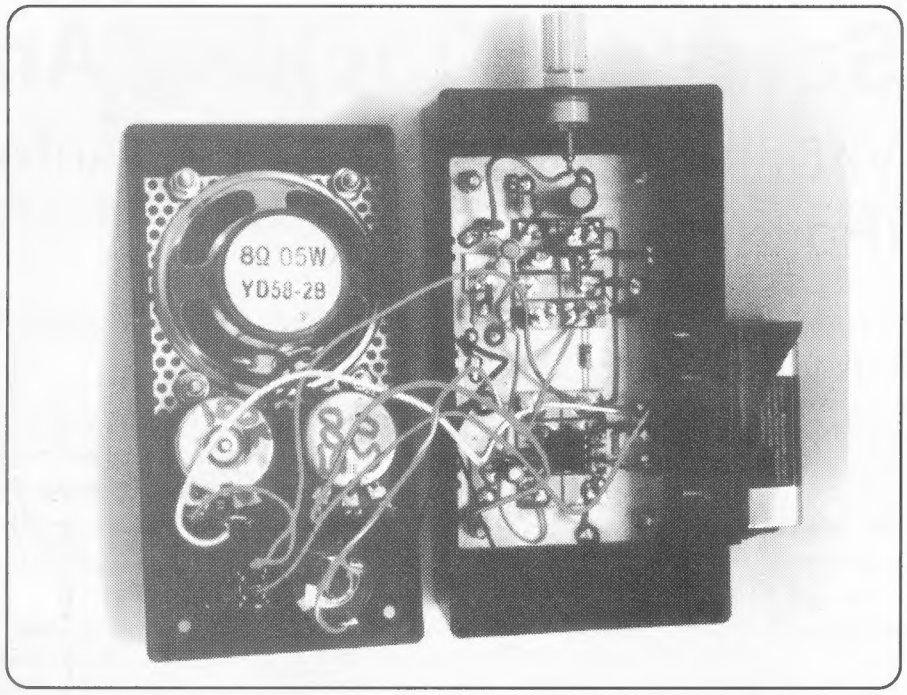


Photo 2

Operation

Double check all wiring and component locations. Set the tone and vol. pots to about mid travel. Switch on. Apart perhaps from a brief click, there should be no tone audible. If you have fitted a key socket for Morse practice, closure of the key should produce a tone output. Verify operation of the tone and volume pots. Insert a wire or rod (if using a rod, fit a suitable knob to the end to prevent eye poking accidents) of about 300 mm into the input terminal. Key your transmitter on air, which should cause the monitor to output a corresponding tone.

Parts

Apart from the MFE131 dual-gate FET, all the components should be available from the usual parts vendors, including Altronics, All Electronic Components, Dick Smith Electronics, Electronic World, Jaycar and Radio Parts. At writing, MFE131's are available from Rockby's Electronics (039562 8559) at about $4 each. If you have trouble obtaining an MFE131 (or BFR84 or 3N204 or 40673), an NTE-222 will drop straight in (same pin-outs for all these devices). You may find NTE brand semi's are stocked by your local TV spare parts supplier.

References and Further Reading

1. I.C. Timer Cookbook; Walter Jung, Howard W. Sams.
2. 'Paddyboard' Circuit Construction; Diamond, AR Feb. '95.
3. Engineer's Notebook II; Forrest Mims, Archer/Radio Shack.

ar

Figure 2

Silent Key

Arthur John Brown VK2IK

After a long brave battle with illness, Arthur Brown VK2IK died in Sydney on 24 February 2001 at the age of 86. A memorial service was held in the Epping Uniting Church 28 February. Arthur had been a member of this church for most of his life.

Arthur started work as the first electrical apprentice at Bushells Teas in 1930. He retired as Head Teacher, School of TV and Electronics, Sydney Technical College, Ultimo.

His ware time service involved acceptance testing of radar and other special equipment for the RAAF. Apart from the break during the war, he was always active from his shack in Gretchen Avenue Earlwood, then for the last few years from the Alan Walker Retirement Village at Carlingford, NSW where providing the HF antenna was quite a challenge.

Arthur was a great traveller. He stayed with relatives in London just before World War II. He went with a cousin on a motorbike tour of Europe and the pair came close to being arrested in Germany.

After the war, Arthur had overseas trips connected with teacher exchange and other matters. These trips took in USA, Canada, China and Europe; initially with first wife, Phyllis and later with second wife, Dorothy. Phyllis died in 1981 after 39 years of happy marriage. A lot of travelling was in a radio-equipped camper van with a special antenna designed and constructed by Arthur.

Arthur is survived by his son Graham, two daughters, Adrienne and Denise and nine grandchildren. Dorothy has also survived him with her five children, fourteen grandchildren and four great grandchildren. The two families have combined in a wonderful way.

Arthur was a great achiever and a valued radio friend

John VK4MX and Charles VK2DH

Satellite Tracking Antenna

VK5ZAI's Satellite Tracking Antenna (Home Brewed)

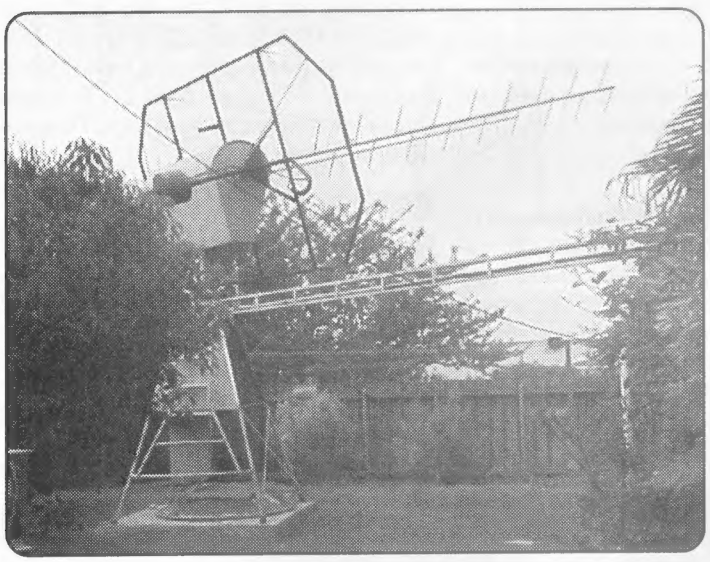
A rugged motorized satellite antenna tracking system for construction by the home handyman

Tony Hutchison VK5ZAI

Following numerous requests for details of my home brewed satellite tracking system I have finally got around to writing an article on it, with a photograph or two, hoping it's of interest to others. It has been in operation now for around 8 years and for several of those years going 24 hrs a day monitoring the 9600 bd birds with virtually no problems.

Although I am using a "Sattrak 3" tracking computer to automate the tracking, the basic mechanics that I will describe can be adapted to most methods of control that use electric motors.

Provided that your QTH is not surrounded by high trees or multi-story buildings I would consider this an ideal Sat. antenna system for the following reasons.



View of antenna in back garden

View shows "tower" base with cross bracing and ladder. Overhead gantry supports cables leading through shade house to the shack. Under the tower can be seen the 1.2m dish shortly to go up between the two beams for 2.4GHz. Shrubs for a 5m radius around the tower are trimmed to a max. height of a little over 2m. The elevation pivot is approx. 3m above the ground, another metre higher may be of help if houses nearby have high roofs but it gets harder to change antennas if this is required to be done often and the higher the more wind loading problems.

Points in favour

1. No high tower required.
2. Every thing can be worked on from the ground with the aid of a good stepladder.
3. Antennas can be changed with relative ease. (Allows you to compare antennas easily)
4. Less problems in high wind areas
5. Far more rugged than commercial Satellite rotator systems available
6. 12 volt operation.
7. Cheaper that commercial units of comparable strength.
8. A lot of satisfaction when completed

Points against

1. Not practical in areas adjacent to high rise buildings or large trees
2. Requires a larger area in the back garden, typically a 10m diameter circle with no shrubs or buildings much above 2m within this area.

Tools required

It is assumed that the constructor has a reasonable knowledge of mechanics and has a welder, angle grinder and drills etc. at his disposal.

Construction

In the construction of my antenna system I used some materials that happened to be on hand to save extra cost, so don't be afraid to change things a bit if you are in the same position. Also use the diagrams and photos as a guide with the text.

Main tower Assembly.

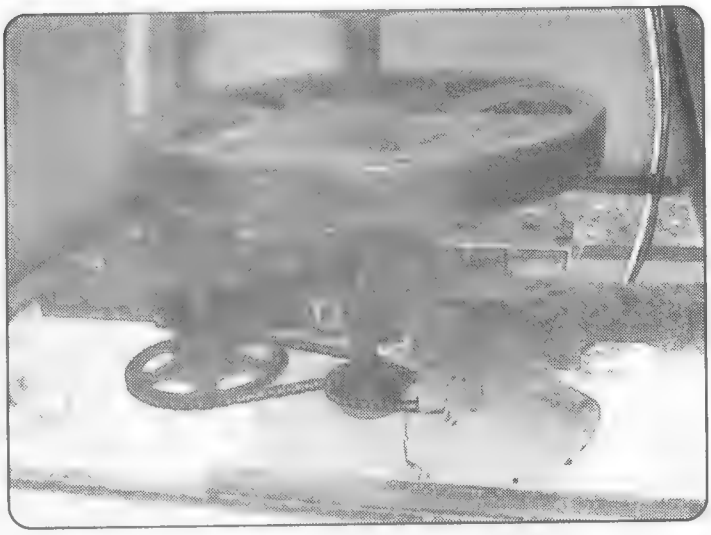
The main tower assembly is built of 1" water pipe, it is four legged and shaped like a pyramid with a flat top. The base is 1.5m square, tapering to 300mm sq. at the top and is 2m high. The top has a 300mm square x 3mm thick steel plate welded to it, in which a 31/2" inside diameter collar is welded to form a bush bearing to take the vertical shaft, which is approx. 33/8" O/S diameter. The sides of the "tower" are covered with 22# iron from the top to approx. half way down to protect the drive from the weather. Although the "tower" is only 2m high I found it necessary to weld cross braces to it, as it was flexing, this being caused by inertia when the Az. drive was starting and stopping. I also attached a ladder to one side to make it easier to service the El. drive and pre-amps, which are located in the rotating elevation head assembly.

The "tower" which stands around 2m above the ground. Note the bull gear with the pinion driving it on the left side. All the major shafts run on ball races and all have sliding adjustments to tighten the chains. W/wiper motor is on the right below the cross member that supports the bottom thrust bearing on the main shaft. Above the motor can be seen the position sensing pot. The motor and bearings housings on all counter shafts are slotted so that the drive chains can be tightened when necessary.

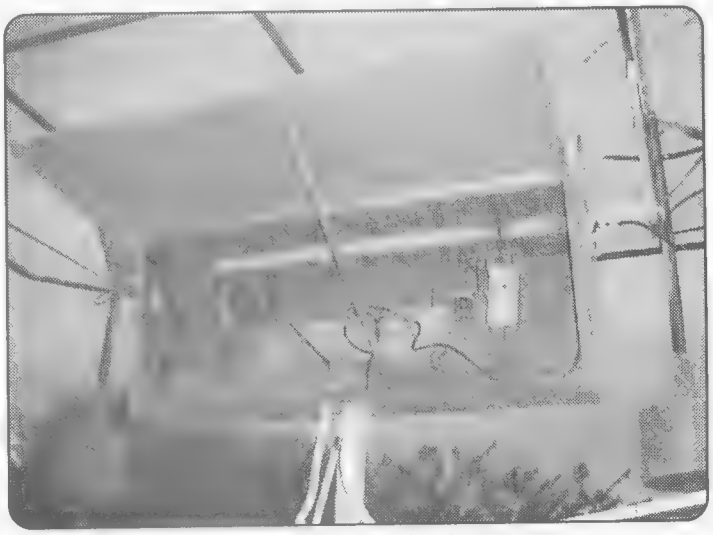
Elevation Head Assembly.

The main vertical shaft is made of thick walled pipe approx. 3 3/8" o/s diameter. The bottom end has a piece of 11/2" diameter shafting 300mm long welded onto it to take the bull gear and a 11/2" ball bearing race on the bottom that takes the thrust. On the top of this 3 3/8" vertical pipe shaft is attached another piece of 3 3/8" pipe at right angles. This is 1.6m long and is welded in the middle to the vertical shaft to form a "T", this forming the main horizontal support for the head assembly. On both ends of the horizontal support weld 700 mm of 100 x 3mm thick channel section extending upwards. Weld into each of these 75mm from the top a bush around 70mm long and large enough to take the horizontal pivot shaft which is made from 2" water pipe. These 2 bushes as well as the vertical one should have grease nipples fitted as the shafts are exposed to the weather. This whole head assembly is enclosed with iron; the top rounded section was made from a 44-gallon drum cut down the middle end on, and joined together. One side panel is hinged from this to allow access to the elevation drive and pre amps etc. (See photos).

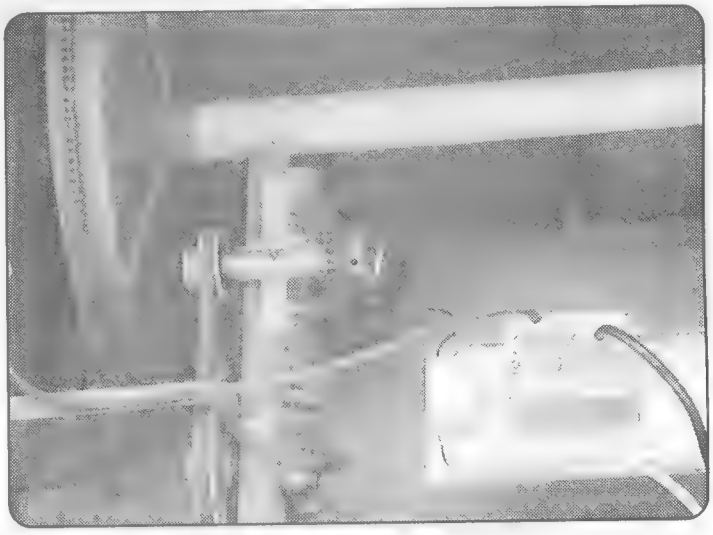
The Elevation Head Assembly with the lid open showing the antennas pointing at nearly 90 degree the reflector can be seen above, along with the counter weights. Inside the housing can be seen the El. drive on the left with the pre-amps in the middle area and the position feedback pot assembly on the right. This potentiometer is driven of a small chain wrapped around the 2" shaft. The counter weights slide up along the pipe that the antennas mount in and are locked in place with 2 bolts. WARNING ! ! On the end of these pipes drill a 3/8" hole through both sides and put a bolt through with a nut on it. This will stop the concrete counter weight slipping off and possibly causing a bad injury should the locking bolt come loose.



Inside the "tower"



Inside the head unit



Close up of elevation drive

A close up of the El. drive showing the motor in the background, the main drive drum and the 70cm Pre-amp on the right. The smaller box to the left of the pre-amp is a filter for the 12 volt motor supply. When the motor started it was

creating a very slight hash so I fitted a filter which cured the problem. Note the ball bearing races on the lower shaft and the V belt instead of a 3/8" chain. A chain would be better but I had the pulleys and belt so I used them, it's OK but it has to be kept tight. One day I may replace it with a chain. To keep things standard all the chains that are used are 3/8". The speed of the drive motors can be changed quite a bit by varying the supply between 8 - 16 volts; also most wiper motors are dual speed.

Drive Motors and Gearing

The ideal speed for tracking is around 1 revolution per min for both El. and Az. drives so a reduction is required. The two drive motors are Bosch windscreen wiper motors, ex the local car a wrecking yard. Make sure that you get ones with a permanent magnet field, as it is only necessary to reverse the voltage to get a reverse rotation with these. I dismantled them and re lubricated the gearbox as well as removing the auto-park bits, washer components, and crank. On the shaft I fitted a 9 tooth 3/8" chain sprocket, this drives a 36 tooth sprocket giving a reduction of 4:1 This goes through another reduction before it drives a pinion that in turn drives the bull gear on the main Az. shaft. A word about the Bull gear, I used one from an old ground drive tractor drawn grass mower. It is cast and is 500 mm in diameter and the matching pinion is 95 mm diameter. The bull gear has internal teeth so the pinion runs on the inside. This is what I happened to find in the junk heap, it is probably an overkill but it won't wear out. You could use another chain and big sprocket but big sprockets are expensive. I would suggest that you find a friendly farmer or tractor agent and ask if they know of any very old tractors that have been wrecked and get the final drive gear and pinion out of that. The main drive on the elevation shaft is again a little different. I made up a disc 500-mm diameter and welded a flat 25-mm. band around it to take the chain and as this shaft only turns 180 degree. I put a bolt through the chain on the opposite side to lock it to the home made pulley. Once again you could use a commercially available sprocket if cost is no problem. Like the azimuth drive the elevation gearing goes through 3 stages to reduce the speed. Another approach would be to couple the w/ wiper motors to a reduction worm and gear drive (again $$$). The whole rotating system may seem a little heavy but the antenna array is quite large and I have a 1.2m dish to fit to it as well shortly which will add to the wind loading.

Control Setup

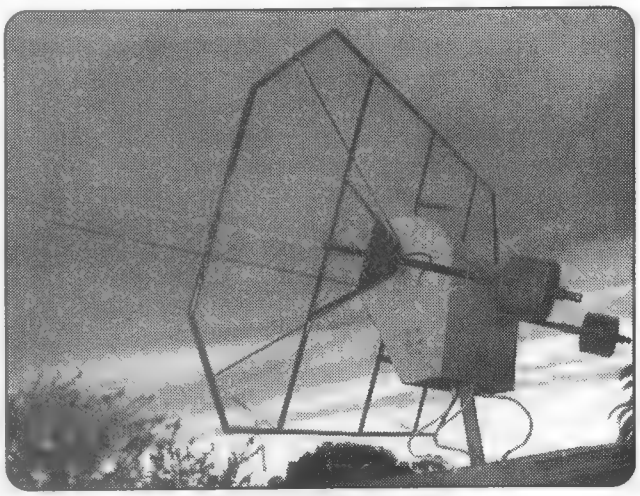
As stated earlier I am using computer controlled auto tracking but the same rotating system could be used by manually switching the El. & Az. motors with 12v DC of the appropriate polarity. I have coupled to the El. & Az. shafts 2 good quality 2,000 ohm W/W potentiometers that supply the position indication voltage back to the tracking computer but these could easily be connected to a couple of meters to indicate antenna direction. If manually controlling the rotation it may be a good idea to fit stops to the Az. shaft in case of over run in fact it would probably be a good idea if I fitted them for auto operation as well, touch wood I have never an over run yet. Don't think it would do the LDF-550 co-ax a lot of good wrapped around a 3 1/2" diameter shaft!

Antenna Setup

My antenna setup consists of a 10-turn helix for 2m and a 21 x 21 crossed Yagi on 70cm, both of these antennae are approx. 5m long, the booms are made from 1.6mm 25mm square steel tube. They are supported from the ends which slide into a heavy walled tube attached to either end of the elevation pivot shaft. The Ant. booms are locked onto the tubes with grub screws. On the rear end of these tubes are two counterweights made from concrete poured in a 20 litre drum with a pipe through the middle so they can slide onto outside and opposite ends of the antenna support tubes. Behind the antennas is a reflector measuring 4m x 2m, the frame made from 25mm square steel tube covered with 25mm mesh. This was originally done to try to shield out the local TV station on 137MHz as it was desensitizing my RX. It is also necessary to have a reflector behind a Helix antenna. As the beams are around 15' long and mounted at one end I have supported the front end with some thin nylon cord back to the reflector, this is not strictly necessary but it stops them whipping as the tracker starts and stops.

Performance

The antenna system has been in use now for around eight years auto tracking UO-22, KO-23, and KO-25 along with AO-13 (deceased) AO-10 MIR, STS missions and the current FM birds without any problems apart from an occasional greasing, and the changing of a feed back potentiometer. I am using pre-amps on both 2m and 70cm Located in the elevation head assembly. Cable to the shack is approx. 60 ft of LDF-550. The Antennas are in the back yard on a township block just a little larger than average with houses on all sides. Using Wisp on the 9600bd Satellites. I have had downloads up to 1 Mb. Per pass. I have compared this antenna setup with the 10 el. 2m and 16 el. 70cm Yagi's up the 60ft tower and once the Satellite is above around 5 degree the satellite system is superior, which proves to me that height is not important provided that the antennas are not obstructed



Another view of the antenna silhouetted against the evening sky

A view of the Head with the antennas, reflector and counterweights showing. Note the crossed Yagi on 70cm and the Helix on 2m. I did have a crossed Yagi on 2m. However I found that the helix gave less fading on AO-13 although I don't think that the overall gain was as great.

History of **Packet Radio** in Australia

Steve Blanche, VK2KFJ
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Twentythree years from its inception and only eighteen years from go to now in Australia and packet radio is a fixture in the local amateur scene

Let us start with amateur packet radio, prior to its starting in Australia.

In the spring of 1978, a group of amateurs in Canada's Montreal Radio Club started discussions on developing packet radio. In the autumn (fall), in Vancouver, a further group of amateurs started discussions on developing packet radio.

This group included one instrumental person, Doug Lockhart, VE7APU, who I believe was a computer systems engineer with IBM, involved with computer communications.

Doug, along with another computer person, a now ex-patriot Canadian, Jim Swetlikoe, VK2BVD, who at time was VE7ABH, went onto form the Vancouver Amateur Digital Communications Group (VADCG) who produced a working packet controller board called a Terminal Node Controller (TNC) in late 1979.

What was interesting was the fact that the Canadian amateurs had a friend in high places.

Dr. John deMercado had worked on the ALOHA project with the University of Hawaii back in 1970. This was not an amateur network, but involved the linking of campuses and buildings using packet technology across radio links.

Dr. deMercado would later become the Director General of Telecommunications Regulations, for the Canadian Department of Communications (DoC). The DoC of in early 1978 gave permission for Canadian amateurs to operate wide band digital transmissions.

With experiments starting in Vancouver, their US neighbours across the border in Seattle, Washington watched with envy. After hosting an ARRL conference in 1980, they opened the door to getting the FCC in US to follow Canada, and permit the emerging technologies. A digital communications group led by Ken Slauso WB7SFO, was formed in Seattle soon after and packet radio spread like wildfire through USA.

In Australia, Peter Deutsch, VK3DMV wrote an article about packet radio for another Australian amateur radio magazine at either end of 1981, or early 1982. Unfortunately he was unable to find others involved at this time.

In late 1982, Jim VK2BVD received a newsletter from his old friend Doug VE7APU in Canada, produced by the VADCG group. Jim then gave a talk about this packet radio technology, to our local radio club (Manly Warringah Radio Society) here in Sydney. At this time, I was working along with Peter VK2ZJO (now VK2WPJ) with a small Australian computer company. Peter at that time was designing ethernet networking interfaces for our computer equipment, so this packet radio technology overlapped with what we were playing with at work.

My task was computer servicing which involved servicing of our computer equipment for Telecom Australia (now Telstra).

By chance, I had been carrying a photocopy of the newsletter from Jim VK2BVD, one of my customers.

At Telecom, Ian Binnie, VK2ZIU spotted the newsletter in my toolbag, realised that I was a fellow amateur radio operator, and asked to photocopy the newsletter. Within a week or so, copies of this newsletter had been distributed throughout the network of amateurs within Telecom.

The newsletter had Jim VK2BVD's callsign written on the top of it, so Jim was receiving phone calls from various amateurs all over Australia, wanting more information. Immediately I realised that, unknowingly, I had been dealing with many people from a work perspective who fact were also amateur radio operators.

Many of the early pioneers in packet in Australia had already been playing with RTTY, prior to packet radio arriving, so the progression to packet radio was only natural.

I thought it was long overdue to do an article on the history of packet radio in Australia. I had intended on putting something together about 8 years ago, to mark the 10th year of packeteering in Australia, but I became distracted by starting a family with my XYL.

Late last year, I realised the need to produce some articles on packet radio, so after assembling some topics, I thought it appropriate to lead into them with a history of what has happened so far.

Perhaps, when 2002 comes around, I can put some further in depth tribulations to print, to mark the 20th anniversary. *VK2KFJ Steve*

At end of 1982 we were organising to import some TNC kits from VADCG in Canada, then at the Gosford Field Day on 20th February 1983, John Tanner VK2ZXQ had his TNC on air and beaconing test packets, from Gosford on 2 metres.

A week later, John and I had created our first packet QSO between North Gosford and Beacon Hill in Sydney on 147.600 MHz. A further week passed and Jim VK2BVD at Frenchs Forest was also on air. March 1983, the inaugural meeting to form the Sydney Amateur Digital Communications group (SADCG).

On 9th April, 1983, I set my TNC as a rather crude packet repeater. I would have to remove an EPROM (2708 1kbyte) and load another EPROM to act as a repeater, so that Jim VK2BVD could connect to John VK2ZXQ, as there was no direct path between them. Soon after, Peter VK2ZJO was on air from Dee Why. None of the other three had a path between them, so it would require them to call me first, to change my EPROM to repeater mode.

On 20th May 1983, John VK2ZXQ connected his CP/M computer (CP/M was an operating system that preceded MS-DOS) Jim VK2BVD and Peter VK2ZJO could connect to John

VK2ZXQ's remote CP/M system, using my station as a repeater. Jim VK2BVD had found some second hand computer terminals, which we connected to our packet TNCs, running 1200 bps AFSK radio modems, also from VADCG. The modems were designed and built by VADCG and used the XR2206 and XR2211 chipset to produce the Bell 202, 1200 bps modem standard.

The first packet community, BBS started on 21st May 1983 on John VK2ZXQ's CP/M computer, using BBS software from Stu Beal, VE3MWM.

Soon after a more permanent packet repeater was setup with Ross VK2ZRQ at Berowra, which allowed connections from Sydney to the VK2ZXQ remote BBS at North Gosford, others came to air before end of 1983, such as David VK2AYD, Paul VK2AQG, Geoff VK2ZAZ, Peter VK2XAD and Dave VK2YME.

We occasionally could work Tony VK2BOA at Newcastle who was running a packet simulation software on a TRS-80 computer. December 1983, packet goes portable, Dave VK2YME and myself, operate packet portable from a mountaintop in western Blue Mountains, back to Paul VK2AQG operating near Gosford.

In 1984, packet groups had also started in Brisbane and Melbourne, John VK2XY goes on air with a TAPR TNC, unfortunately, John can see the packets produced by our VADCG TNCs, but the VADCG TNCs do not decode the packets from the TAPR TNCs. Later, we found that the so called "Vancouver" packet software has many variations, so the software supplied by VADCG and the software supplied by TAPR is not compatible.

There are several architectural versions of the "Vancouver" protocol, the version used on VADCG TNCs in Australia was version 1.3, the same situation applied for the Vancouver V2 and V3 protocols, which were architecturally different to each other and incompatible between versions. Also in 1984, the SADCG design a 300/1200 bps radio modem, with board layout done by Bob VK2ZTN, using the AMD 7910 modem chip.

I think TAPR TNCs, well, at least most of the early TAPR TNCs came to members of the Hornsby club (HADARC), which tried and preferred the new AX.25 protocol.

This was also supplied on the TAPR TNCs, this group moved onto 147.575 and later created the TAPR Users group (TUG), which in later years went onto become the Australian Amateur Packet Radio Group (AAPRA) The early pioneers using the TAPR/AX.25 combination were John VK2XY, Brian VK2KTQ (now VK2JE) and VK2ENC were all on air by November, 1984.

The first packet gateway from HF to VHF occurred on 1st September, 1984.

This linked ZL1AOX in Auckland and ZL3QL in Christchurch to connect via VK2BVD on 14 MHz and gateway onto 147.600 to access the VK2ZXQ remote BBS in Gosford, and also provided keyboard to keyboard contacts to other VHF packet stations in Sydney.

One of the popular computers used this year was the Texas Intruments TI-99, Dave VK2YME developed a combined terminal and mailbox program called RCOM, the terminal program included encryption mode for private keyboard to keyboard contacts.

November 1984: tests begin on the Vancouver V2 protocol and the implementation of a digital repeater, with some intelligence and interaction. Bruce VK2BFO develops and runs a TRS-80 based BBS. Several surplused Xerox 820 computer boards end up on packet in Sydney area.

Later, these Xerox 820, which were CP/M based, where the basis for NOS (TCP/IP) development, by Phil Karn KA9Q. Bernie VK2KAD develops some packet decoding software for the Microbee, VZ-200 and ZX-80 computers.

In early 1985, we start seeing packet software for the Commodore C64 and also terminal programs for the IBM PC appearing and start seeing more radio modems using the AMD 7910 modem chip. Many of us started buying IBM XT PC clones for use on packet. Dave VK2YME ports his RCOM program across to the IBM PC.

April, the formation of TUG happens (TAPR User Group) here in Sydney. The first AX.25 digipeater was licensed in November, as VK2RPH. Paul VK2AQG and Geoff VK2ZAZ did experimental packeting to North America via AMSAT satellites.

1986 saw the porting of AX.25 protocol for the VADCG TNCs, along with EPROM and memory expansion boards, this provides users of the VADCG TNCs with a choice of protocol for either Vancouver V2 or AX.25. The TAPR TNCs and TAPR clones now only offer AX.25 protocol only.

There are now various software packages for Commodore C64 and VIC-20 computers. Kantronics is another popular TNC from USA. The W0RLI HF/VHF gateway software begins development in USA. TUG now has over 100 members. TUG now changes name to AAPRA. MPRG get their first digipeater for Melbourne on air.

January 1987:

The HAPN 4800 bps modems were tested for the first time in Australia, these modems were designed and produced by the Hamilton Area Packet Network group in Canada. Also there was the new bandplan for 2 metre packet allocations, opening up an additional segment from 144.800 to 144.900. The SADCG produces a 1200/300 bps (VHF/HF) radio modem board, using the AMD 7910 modem chip. A new digipeater comes onto the scene - NET/ROM.

Late 1987 saw a Australian made TNC kit, from the Shepparton packet group, called the TNC220+, by Ray, VK3YNV. There are now fifteen AX.25 digipeaters between Sydney and Melbourne.

John VK2XY started operation of the W0RLI HF store and forward BBS software, forwarding packet mail between Los Angeles, Hawaii, Tokyo, Brisbane, Perth, Adelaide and New Zealand. By end of 1987, NET/ROM was installed and under test at VK2RPH in Sydney and also VK2RPN Newcastle and VK2RPS. There were now fifty of the 4800 HAPN modems operational in Sydney, Canberra and Melbourne. The WIA NSW Division established a packet BBS at Dural on 147.600 MHz. TAPR announced their new 1200 bps PSK modem for satellite use. The WA4DSY 56kbps RF modem was announced in U.S, giving a high speed modem for LANs, using 70 kHz bandwidth. This was fine for U.S. and Canada, as both countries had allocations on 220 MHz for wide band digital transmissions. Pac-Comm has the new TNC-220 TNC from USA. MFJ are also selling HF & VHF TNCs. AAPRA now has over 250 members.

1988 experimentation with ROSE networking protocol was developed by the RATS group in USA, in particular Tom, W2VY.

ROSE nodes were built and spread throughout NSW under the guidance of Barry VK2AAB. Two simultaneous networks were developing in Australia NETROM & ROSE. There was a packet

terminal software package developed for the Microbee computer. MSYS is now another popular BBS program. Packet frequencies are allocated for 6 metres. Paul VK2AQG starts experimenting with NOS (TCP/IP) package. NOS (Network Operating System) is a software package for the IBM PC, from Phil Karn KA9Q.

In 1989, the Commodore Amiga was seen on packet radio, with its own user group, formed by Larry VK6CP.

There were now six ROSE nodes accessible from Sydney. AAPRA had now supplied eighteen digipeaters across Australia. Gordon VK2AGE and Brian VK4AHD experimenting with AMTOR to packet gateways (HF to VHF). Australia saw the G3RUH 9600 bps modem.

1990 saw the MBL BBS, from Jeffrey WA7MBL, in action on several BBS stations. Jeffrey was also known for YAPP protocol, a popular software used by packeteers for transferring files over a packet radio connection.

ROSE nodes now numbered thirteen across Australia. PacComm Tiny-2 TNC, from U.S. was released. Nat, VK2OP is running a C64 BBS system.

1991, AAPRA was running a ROSE server, VK2IN. TAPR had the TNC-320 TNC. The packet DX-Cluster made its appearance, the DX-cluster allowed fast dissemination of HF DX reports worldwide, using packet radio. The latest version of *Paket*, a PC based packet terminal program was produced by Tony, VK2DHU.

Warren, VK1XWT presented a paper on NOS (TCP/IP) to a symposium in Canberra, this creates a major turning point for packet radio.

By 1992, AAPRA had set up and assisted with thirty nine digipeaters across Australia. The BAYCOMM modem and packet program from DL8MBT and DG3RBU starts another mini revolution amongst the packet fraternity.

By mid-year there were twenty seven ROSE nodes operating across Australia.

The 1990s brought strings of both coastal and inland digipeater links across the eastern states, from north Queensland to Tasmania. These were a mixture of Netrom, ROSE and AX25 digipeater networks and small pockets of TCP/IP activity.

TCP/IP gained momentum with the development of AX-IP and IP-IP encapsulation to provide connections between localised amateur TCP/IP networks, across Australia and rest of the world, using the Internet as a transparent transport, known as wormholes.

The wormhole opened up a world of FTP (File Transfer Protocol) activity, converse bridges, enhanced realtime packet DX-Clusters. The wormholes also allowed for gateway and interfacing to NETROM and ROSE networks, thereby extending the borders of these protocols, by connecting them to their counterparts interstate and overseas.

There were also permanent ROSE links via satellite from Sydney to Perth, opening instant connections using the ROSE network across the country. A multitude of Windows based terminal and BBS packet programs emerged, offering an immense amount of facilities for packet operation. Sound cards started being used for decoding and encoding of packet and other digital modes, such as PSK31, within PCs.

So within 18 years of amateur packet radio in Australia, many changes have occurred within this particular facet of our hobby of amateur radio.

The next article will cover sources of information relating to packet radio and using the internet as a tool for finding that information.

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AMSAT

Editors Note. The AMSAT Column for April got mislaid. Here is the more urgent material. The other topics will be covered in future AMSAT Coulmns. Sorry VK5UE

The Shape of Things to Come

With AO-40 undergoing commissioning and final orbit positioning, it is not too soon to look to the future. The Board of Directors of AMSAT-NA met in February to consider a number of items, specifically the format and nature of the next AMSAT satellite project(s). The meeting took note of the fact that it would be some time before a full evaluation of AO-40's potential would be completed. It was also recognized that it takes several years from initial concept to launch for any new satellite project, and that the year 2001 is the right time to start the planning and design process for the next series of satellites.

Several members of the AMSAT-NA project committee were present at the meeting. Their proposals were made based on two guiding principles: 1) input from AMSAT membership about the type of spacecraft, frequencies and operating requirements 2) the desire of the AMSAT technical membership to keep advancing the state-of-the-art and providing new solutions for improving satellite communications.

The Board of Directors considered and approved the following three projects.

1/ a new satellite to be placed into a geostationary transfer orbit. The proposed satellite project would feature communications at 2-metres, 70-centimetres, 1.2, 2.4 and 5.4 GHz, with actual uplink/downlink frequencies to be determined. The satellite would weigh a maximum of 100 kg in mass and would have a power consumption of about 100 watts. Stabilization would be provided by spinning the spacecraft.

2/ the Directors approved the idea of designing, building and testing a new Internal Housekeeping Unit (IHU) for use in future AMSAT satellites. The existing design, although very stable, uses components that are very hard to find. A new unit design would use improved techniques and more readily available components.

3/ the Board approved design, construction and demonstration of a new mode using digital modulation techniques. This would improve communications under very poor conditions or, alternatively, permit the use of lower power and/or simple antennas.

It is anticipated that both the second and third projects would be ready to be a part of the main satellite project, so that a digital modulation system could ride along with traditional SSB/CW modulation techniques.

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Novice Notes

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More Crystal Sets

Response to December's column was so favourable that we return to crystal sets and allied topics this month. Keep reading to find out how to improve your AM broadcast reception, make your crystal set deliver hi-fi audio and set a fashion trend with the all-new 'wearable wireless' pedestrian mobile crystal set.

A frame antenna for AM radio reception

Portable AM broadcast receivers normally have no external antenna connection and are not designed for long-distance reception. However the addition of a directional antenna can greatly improve reception, even on cheap receivers.

Figure One shows a rotatable frame antenna that can be used with any portable receiver. It consists of a large pick-up coil wound around a cardboard box or plastic storage box. The receiver is placed inside the box. A variable capacitor brings the antenna to resonance on the frequency of reception.

To construct, wind about 27 metres of insulated wire around the box, which should be around 400 millimetres square. No spacing between the coil turns is required. Make a pair of holes or use adhesive tape to anchor each end of the winding. Connect the coil to an old 10 - 415 pF air-spaced variable capacitor. One side of the coil should go the capacitor's case (which is electrically connected to the moving plates) and the other to one of the gangs. As discussed in December, a plastic dielectric variable capacitor can also be used, but at the expense of tuning range.

To use, tune the radio to a weak AM signal near the middle of the band. Then place it inside the box. The windings on the set's ferrite rod should be parallel to the windings on the box. Carefully adjust the variable capacitor until an increase in signal is noted. Then rotate the box until the signal level peaks. The received strength should be very much greater than when the receiver was outside the box. Note that the tuning on the box antenna is very sharp – re-tune with every receiver frequency adjustment.

When turning the box, you will find nulls, where the signal level falls dramatically. This directivity can be used to null out interference from power lines or electrical equipment. Also when tuning to a weak signal adjacent to the frequency of a local station, rotating the box to null out the local station can be helpful in reducing adjacent-channel interference. In some cases, the null can be sharp enough to allow two stations using the one frequency to be separated, just by rotating the box.

If you find the frame antenna does not cover the whole broadcast band (do tests about every 100 kHz between 530 and 1600 kHz to verify this), change its coverage by adding or removing coil turns. Adding turns reduces frequency and removing turns increases frequency. Use an alligator clip and install a tap near the middle of the coil if extended high-end coverage is desired. This could be useful for reception of the narrowcast stations above 1602 kHz and 160 metre AM operators. Another modification is adding an extra winding of a few turns near the main winding. This allows the frame antenna to be used with receivers that have external antenna sockets, such as communications receivers.

Despite its small size, the rotatable frame antenna dramatically improves AM reception. It does this by increasing sensitivity and selectivity while reducing interference. Signals marginal without the antenna become pleasant listening with it. Even during the day you will be amazed at what can be heard

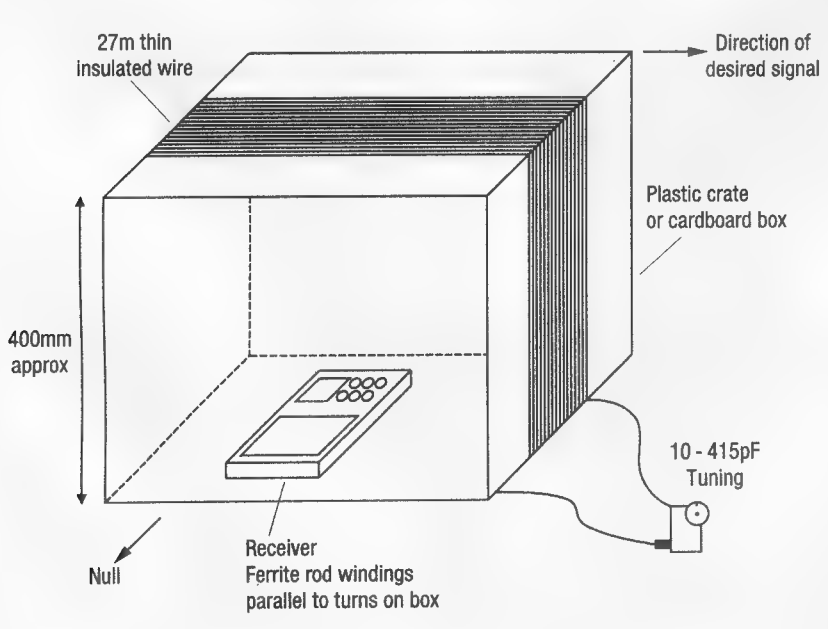

Figure One: Frame antenna for AM reception

on a cheap receiver assisted by a frame antenna. Build it and hear for yourself!

A frame antenna crystal set

Nearly all published crystal sets designs require at least an outside antenna to operate. This one is different. Its larger than average coil picks up signals with no antenna and earth connection required, particularly in urban areas.

The portable crystal set shown in Figures Two and Three is identical to the frame antenna described above except for the addition of a diode detector, capacitor and headphones. Use is similar to the frame antenna – tune in a station and rotate the loop for maximum signal strength. Again the prototype was constructed on a spare plastic packing crate about 40 centimetres square, though a cardboard box would perform equally well.

The receiver was tested in suburban Melbourne. Approximately ten stations were received, but at low volume. This was gratifying considering its relatively small size. However, unless you live near the local AM broadcast stations, this receiver is only really suitable for use in a quiet room.

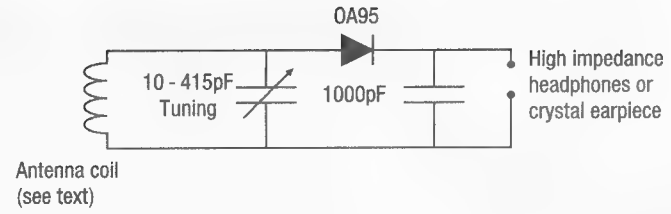

Figure Two: Frame crystal set schematic diagram

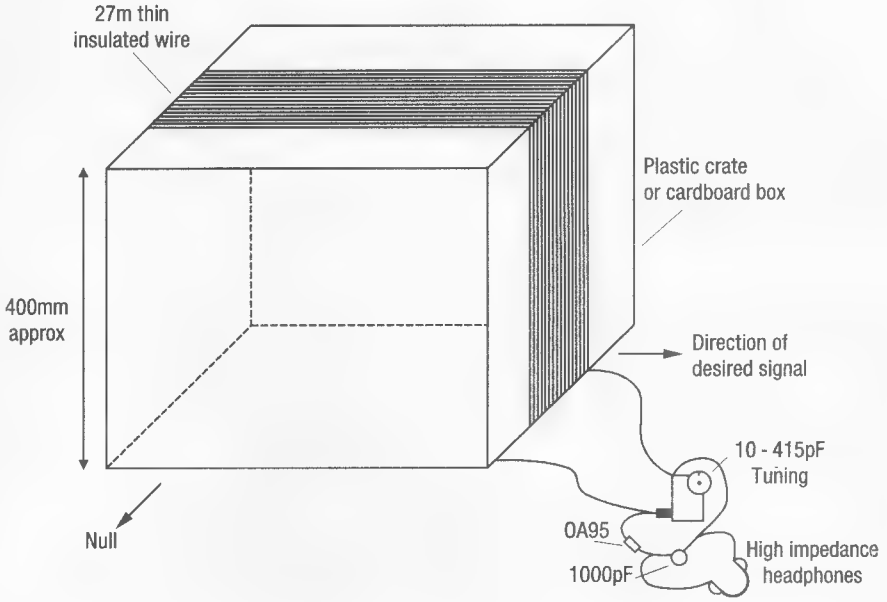

Figure Three: Frame crystal set

The 'Wearable Wireless' - an improved frame antenna crystal set

After the encouraging results with the frame crystal set, an improved version was constructed (Figure Four). Its main difference is the much larger area enclosed by the coil. This resulted in greatly increased volume with no loss of selectivity.

The design concept was of a wearable 'pedestrian mobile' receiver, wholly powered by the signal of the incoming station. It was originally built for a local hamfest crystal set competition and would have almost certainly won the 'most unusual entry' prize, had it been completed in time!

The Wearable Wireless looks like a single-element quad loop antenna for about 70 MHz. The circuit is identical to the set described above (Figure Two) but the physical construction is different due to the larger coil. As with the receiver described in the December issue, a polyethylene chopping board forms the heart of the set. Extending from the corners are wooden spreaders 600 mm long. In the centre of the board is a plastic box that houses the tuning capacitor and diode detector. Four banana sockets are used for the coil and headphone connections. An old hot water bottle provides padding for the wearer. If necessary this can be stuffed with old newspaper or other filling to further improve comfort. A discarded belt is attached to the chopping board to allow the set to be tethered to the listener. For most convenient operation, the set should be worn so that the hot water bottle fits in the small of the user's back.

Clothes pegs are glued in the far end of each spreader to hold the windings. With the 60/160pF tuning capacitor used ('O' and 'A' terminals wired together) 6 turns were required to provide broadcast band coverage. Again this requires 27 metres of thin insulated wire. Heatshrink tubing or insulating tape can be used to keep the wires bunched together.

Though not quite as loud as a crystal set with a good antenna, the set works remarkably well. Selectivity is good, and is all that is required for reception of local signals. The set has two main shortcomings. The first is that changing the station requires one to have the skills of a contortionist in order to reach the tuning knob behind your back. Secondly the antenna's sharp null means that you may lose reception when going around a corner. Though the Wearable Wireless will not necessarily be your most used receiver, its construction will challenge your ingenuity, have great novelty value and make you the centre of attention at the next radio club meeting or hamfest!

Observations on crystal sets from Felix VK4FUQ

Felix VK4FUQ has been experimenting recently with crystal sets. Along with a very informative letter and article from the local 'Backscatter' club newsletter, he sent *Novice Notes* a cassette recording of reception from his latest crystal set. Overall fidelity was excellent and, to my ears at least, comparable to FM radio.

Felix made the following observations:

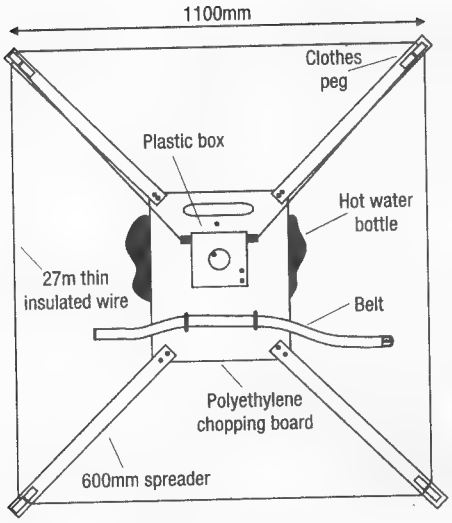

Figure Four: Frame crystal set – improved version

A double tuned circuit always dramatically improves selectivity, regardless of coil tappings.

Gold bonded germanium diodes (e.g. 0A47) provide outstanding clarity and efficiency.

Voltage doubler detectors using two diodes do work, but produce somewhat muddy and ill-defined audio, as confirmed by listening tests and spectrum analyser measurements.

No improvement has been noted when adding bias to germanium diode detectors. However bias applied to detectors using silicon diodes (1N914, etc) is highly beneficial.

It is important to have a DC load on the diode detector. Felix used a 10k potentiometer.

When using the crystal set as a tuner for a stereo amplifier, it is a good idea to add a one transistor audio preamplifier. Use a BC549C and metal film resistors to minimise noise. Feed output to both left and right stereo inputs tied together.

Correction to December's Novice Notes

Constructors using plastic dielectric variable capacitors should bridge the 'A' and 'O' tabs to increase maximum capacitance, rather than the 'G' and 'O' connections suggested. Also if a crystal earpiece is being used it may be necessary to wire a 220k resistor (not critical) across the earpiece for correct operation.

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Is there a future for WIA?

Continued from page 3

The focus of the WIA should be on radio, supported by competent administration.

Administration such as budgets, accounts, constitutions etc are merely tools we use to achieve the goals of our organisation. There are some, at the most influential levels in the WIA, who have made these things into holy writ to an extent that the admin tail seems to have been wagging the amateur radio dog.

As this debate has progressed I have become more certain that we should replace our state level of administration with a set of technical committees or interest groups operating on the national level. They can foster their part of the hobby, involve newcomers in it as well as publicising new activities, modes and processes.

The new organisation should be taken as a way to streamline and make easier the work of the many volunteers in our hobby. That also means keeping the formal structures, processes and administration to an essential minimum. As well as making sure members have clearly defined lines of communications into the organisation.

The WIA must also be seen to be optimistic about the future of Amateur Radio and fostering the spirit of excitement about new things.

We should put Amateur Radio first. Once we have decided what we should do then we can look at how it can or should be administered. Changes that may be required to budgets, accounts, or constitutions can then be worked out and recommended by the executive.

I cannot state this strongly enough. We must decide what is best for our hobby. Then, and only then, should we consider the needs of business administration.

The WIA should be an open organisation.

The members "own" the organisation and have a right to be involved in its processes. There should be clear avenues for members to send and receive information on anything happening in the WIA.

The past years have tended more and more to secrecy and confidentiality. There is no need; the need is the opposite. Inclusion and consultation should be the way of doing business in a members based organisation. The members need to feel that their views are taken note of and acted upon where appropriate.

Commercial in confidence stuff applies to a couple of things the organisation does. Like negotiating conditions with staff, or letting a contract. Even in these areas there is room for consultation prior to negotiations.

Two or three people acting on their own should never take very significant decisions behind closed doors.

Debates on important topics in radio should be held in the widest possible forums. Mechanisms for excellence in WIA communication should be determined as part of the creation of the new organisation

Conclusion

None of these principles is, by itself, sufficient to stem the decline of the WIA. Accepted as a package and then implemented through a new streamlined and responsive organisation will, I am sure, lead to a better future for both the WIA and Amateur Radio in Australia.

Martin Luther VK5GN **April 2001**

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The Ultimate Antenna Mast

Dave Smith VK2DAL
and Dave Pilley VK2AYD

As we get older, our mast climbing capabilities come into question and we tend to look for something a little easier to service than a 25m tower. I've been retired for a few years now and having had a new hip replacement plus some heart surgery I find neither are exactly conducive to climbing masts and adjusting antennas.

Another local ham and I decided we would like a tilt-over 15m tower. Something that we could lower and adjust the antenna after the parrots had eaten away the insulation on the traps and let the water in and changed the swr. Trying to purchase such a mast in Australia can be very frustrating as no one advertises such items. After a long search I found a supplier in Melbourne, about 900km away. Yes, they had them, but you had to make your own arrangements for transport, installation, etc. They were really keen not to sell a couple of towers - perhaps it looked better on their inventory lists!

In the process of looking I heard about an Amateur in Queensland, about 850km north of us, who was using two utility posts spliced together to give him a height of about 50m. His antenna was transportable from the base to the top by means of a tramway. Easy to service and easy to lower when the cyclones came through. I took a drive up and had a look at this installation and decided this is it - the ideal system for the ancient retiree!

A talk with the local Power Company and yes, they could sell me a 16.5m pole and yes, they would be delighted to install it for me.

It all seemed feasible so out came the drawing board. As some 2.5m would be in the ground, I was only left with 14m to play with. I decided to use two tram tracks 12m long, supported on the mast by struts at 1.8m intervals. The tram tracks had to be strong enough to support a tram unit that would comprise the rotator and a 3.6m H.T. Aluminium 50mm mast for the 3 element yagi. The tram would be manufactured from heavy duty aluminum.

A locking system was necessary at the top (just in case the cable broke). The hoist cable system would be controlled by a 12V marine winch located about 60cm above the ground. The battery would be housed at the base and charged by solar cells. Sunshine was something we have lots of here.

So my design was finalized, now for the hardware. We went to the local Power Company and, with the help of a very knowledgeable power employee, chose a pole, about 60cm diameter and 16.5m long that was straight and had a good surface. A few days later this was delivered and laid in the back yard. In the meantime I had been searching for suitable tracks and eventually chose the heavy duty tracks used for factory doors. These were in 4.8m sections, which meant some very good

From TOP:

1. Drilling the hole

2. Dropping the mast into position

3. Pole in position (VK2DAL on right)

welding was necessary to join them so that the roller wheels on the tram would run smoothly.

Before installing the tram tracks, I gave the mast a few coats of protective paint (green so that it would blend in with the trees). The bottom 3m was creosoted and oiled to protect against the very fierce white ants that roam the local woodlands.

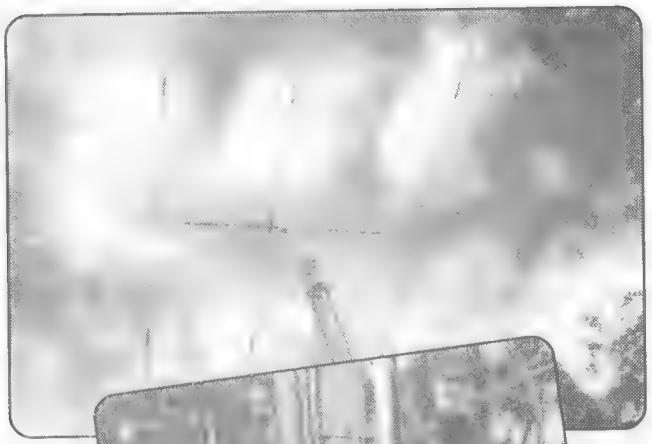
At the top I installed a simple locking system that will lock the tram in the operating position. This would be controlled by a separate line (rope) that has to be released before the tram can descend. The tram turned out to be a little larger than I first envisaged as it would be under some pretty heavy strain at the top with the aluminium mast supporting the antenna. The rotator/mast had to be at least a 30cm away from the mast so that the antenna can be easily raised and lowered. Basically the tram is a "U" section with strut support both axially and radially.

Once the hardware was complete the Powèr Company returned and in a very short time, drilled a hole some 2 to 2.5m deep, lifted the pole up and set it in place. It's so easy when you have the right equipment.

The rest of work was not difficult. Of course the tram got a work out before the antenna was attached, as there was a small learning curve to be absorbed. The antenna can only be lowered when its in a certain position— if it's not in the correct position and the boom or an element catches on the mast, the consequences could be drastic—need I say more!!

It all works wonderfully well. When I want to lower the antenna, I use the hand line to release the safety latch and the winch does the rest. In a minute the antenna is at ground level and easy to work on. It's totally self supporting, no guys and looks real good.

If you would like more information feel free to contact me, David Smith, VK2DAL by e-mail: davsmith@felglow.com.au



Anticlockwise from TOP:

4. Antenna in position.

5. The Tram with rotor and winch

6. Pole in position (VK2DAL on right)

7. Antenna and mast.

Unlikely Projects —

Charlie's Toys

or

How I muddled through and survived

NO 2. DC/DC Converter

Charlie Sims VK2ABF QTHR
Email chasims@ozemail.com.au
Fax by arrangement only 02 9635 9937
Voice line 02 9635 9937
M/Hd QF56LE

Why?

No reason really, but when stated more accurately as a DC power supply for the FT200 (Transceiver), the following points contribute to the feasibility of the project—pity!

I have two FT200s, one of which being a gift from Cyril, VK2ACQ, a member of our 40 metre net. Frequent boasts that I have made on QSOs of the net concerning my numerous projects rendered me liable to put up or go QRU. One dream concerned the wish to surprise other members with a mobile call from outside their QTH on sked night. Home brew power supply - of course. Publications of the ZL-FT200 club of which I was a member featured a number of such projects comprising two modules to provide the various voltages for the rig.

The FT200 requires the following voltages:- 600v @ 250 + mA, 300v @ 50 mA, 150v @ 130 mA, 100v neg. 5 mA, 12.6v @ 5.5 A

Now, Dave, ZL1BJP, John, ZL1BBU, Jamie, ZL2NN and typiste- Mrs. J. Carpenter- to name a few stalwarts- are to be highly commended for their dedication in sustaining such a club and producing valuable hard copy technical guidance for their members. Trouble is, I could not get past the first module without being disheartened by early endeavours. e.g. No more than 40 watt could be squeezed out of the first module tried. Initial checks indicated that the primary winding at 16 gauge was capable of only 3.6 amp according to wire tables. I subsequently identified as limitation No. 1.

Which core ?

Well, I had already chosen a core from a TV line transformer. These seemed to be spaceous enough to accommodate all the windings in one module and the cross-sectional area seemed to be adequate when compared to pot cores etc. With this size core it seemed *likely* that one could use 10 gauge wire for the input winding and luckily, I was able to fit 10 +10 turns - not bi-filar, but first soldering the flattened centre tap around the exact middle and winding each way of centre. An "AA" dry cell served as a mandrel after shrinking tubing over the bare wire. Four and a bit turns each end had to be reverse wound-second layer. This brought the three "ends" out at the centre, conveniently allowing a base for the 150 volt winding, also the 6 turn (centre tapped) exciter winding for the transistor bases. For 10 turns and 12 volt, the windings become set at 8.33 turns per volt, and so about 120 watt overall output is expected less the efficiency factor.

Other windings(300v & 100v neg.) went on the far arm of the core. It was proposed to utilise doubler tactics to obtain 600 volt for the P.A. tubes.

Timely warning!

These things can be horribly lethal, so take extra care when testing it- you know the drill- warn the kids or other intruders especially if you use a power diode plus electrolytic for DC measurements. Yes, I received one whack! Note:A perspex cover is under construction.

Circuitry.

Solid-state devices used were 2N3055s, 1N4007s all round, but a 2 amp diode for the snap-back pulse around the primary. Wire size— well, I used what I could find in the scrap box- after checking the wire tables for current carrying ability, I suggest you check with projects in A.R.R.L. or R.S.G.B. publications.

A simple doubler circuit got me up to 600 volt with 80 Mfd electrolytics and taking 300 volt from the centre of the pile. The 150 volt supply needed restraint as it was inclined to go pretty high during warm-up and stand-by. (280 volt on the screens of the finals isn't a good thing.)

Two 75 volt neons in series across the line-with 150 ohm if you like- kept the lid on it. A 350 mA. torch globe has been used for a fuse in the HT. line in case the 100 V. bias supply fell too quickly at switch off.

Hardware mount

It is a short piece of hollow aluminium security door stile. The moulded heat sink was screwed to one edge of it after making a gap in one ridge.

On the other end.a square block 11 hole valve type socket has been fitted side by side with the heat sink. 11 pin sockets are pretty rare,let alone the square block moulded type. I was lucky to have one which mated with my FT200 power cable. Some ingenuity will be needed to replicate this.

Capacitors

Mine are 80Mfd. X 450 volt obtained 30 years ago at 40 cents each. These are also pretty rare now and quite costly. Being single ended, they sit - toes up- into round holes cut to size in the space along from the transformer assembly which is bolted down. One hole is a bit bigger to allow for an insulating wrap around the 600 V capacitor. The cut-off base of a plastic pill bottle sits under it, and a plastic lemonade bottle provided the wrap for the full height.

10 Mfd. X 350V capacitors sufficed for both the 150V and the neg. 100V supplies.

Initial trials

Slightly disappointing- really:-

No IC flowed and bias adjustments didn't help. Heaters were a bit pale because of the series diode which I put there to protect them from a possible 14.2 V. from the charger. (not to worry as there is enough drop in the 3 core cable). The HT flew up to about 900 V. and stayed there. (no load - silly).

Other voltages were about 15% low of their mark. (it was only a five cell battery and a four amp charger.). The charger thought it was a welder (hot!) I mention these points for future reference.

Do I hear someone say "not _... likely-om" Well, if this is published. I could have it corrected by then. Just wait and see!

Diagnostics

Before abandoning the whole thing, it was only fair to put it through casualty and intensive care with about as many meters and blinking lights. With a few adjustments it became possible to obtain good receiver service. Switch to transmit in order to set the standing bias and strange things happened: It seemed to me that the current drawn by the H.T. was robbing the negative bias supply of valuable volts- which -in turn- caused more I.C. to flow and it—— in short it looked like a runaway situation. Starvation at the far end of the core ??? Well yes, because the whole H.T. plus 300V line dropped to zero. Meantime, the 150 volt service went mighty high. A frequency counter showed that the system was fibrillating- it was even counting the spikes! The C.R.O. showed a lot of unintelligible whiskers - but the device was still working.

Disconnect and re-connect the battery but nothing happened. After waiting about 35 second and re-connecting again we were back in business, but the same. A time dependant problem somewhere, but what ?? Weird really!

Don't give up

Just before scrapping the device, a sub-concious piece of reverie suggested why not try doubling to 300 volt in the 150V winding? after all, it was at the near end of the core, and the wire had half-amp capacity. This would allow full-wave rectification of 300 volt at the far end, and it could be sat upon 300Vat the near end- providing a substantial 600V instead of a shaky 740V as before.

Promising!

Voltages are now nearer to normal, viz H.T is 618V and steady, 150 is at 128, 300 is at 248 but whilst the battery terminals read 12.2 volts, it shows only 8.5V at the unit. The above voltages are insufficient to pull in the relays which is why the transmitter shrinks away from D.X. contacts.

Luckily, I have a secret winding unused which will bring those voltages up to scratch except for the 12V line. Possibly better and shorter cables, better battery and try feeding the final's heaters from another source. (2.5amp here)

Unlikely?

Current practice at the time of the F.T.200 heyday was to go for two modules – looking at 25 amp from the car battery. In fact, the ZL chaps who actually did this, some at least talked about having an extra battery on the same charging circuit and produced nifty circuits to achieve it. My objective, apart from that stated at the beginning of my article is to get the consumption below 20 amp which to my thinking is more conducive to a single battery in one car.

Give me a 1975 vintage station waggon with "normal" ignition and timing system and I'd be tempted to call on my friends one dark night at sked time. However, there's no way that I'd dabble with the electrics of a modern car for the sake of one occasion of one-upmanship with my contacts. Sure, there are many mobileers on H.F. using suitable rigs- but the FT200!

?????? — not #@$!%!! likely!. Any ideas as to what to do with this? PLEASE BUZZ ME.

73s de Charlie.

AO-40 Responds to New control Measures

The news coming from the AO-40 control team continues to be promising. The sun-sensors have once again 'captured' the Sun. They had temporarily lost the Sun but seasonal changes have meant that the satellite attitude can be more closely monitored and the very high spin rate corrected. During the past several days of magnatorquing the spin rate has been reduced from nearly 18 RPM down to 13 RPM. This represents a reduction of about 0.74 RPM per perigee which means that AO-40 should be spun down to the target of about 5 RPM in a bit over a week. The next job will be to bring the spacecraft into the proper orientation to test-fire the Arcjet with no electrical power and gaseous ammonia only. The test firing will be used to check the Arcjet control electronics and valves. Even without the Arcjet "burning", the thrust from the test firing will be enough to raise the perigee by about 100km. Independent analysis has confirmed that the current orbit will be stable for many years, i.e. more than the anticipated lifetime of the spacecraft. However, it is later planned to optimize the current orbit with a full running Arcjet. This will follow on after testing of the 3-axis momentum wheels, which will be used to re-orient the spacecraft during these maneuvers. If the 3-axis momentum wheels work as hoped, the satellite will be de-spun completely and then remain in an attitude which will have the antennas earth-pointing at all times.

Adelaide Hills Amateur Radio Society

Well, did we speak to you during the Field Day? If not, Why not? It is a very good club activity. We are fortunate in having a site where we can sleep comfortably but be out in the field for all the operating.

As it was intended, the John Moyle Memorial Field Day gives us excellent practice in the use of mobile, totally portable radio equipment, such as might be needed in the event of some emergency.

John Moyle, long time editor of "Radio and Hobbies" magazine (the same magazine we now buy as "Electronics Australia") was very keen on the idea that as radio amateurs we should all be able to operate under extreme conditions. We should have equipment that could be operated from batteries or portable generators and we should be able to erect antennas capable of allowing our signals to be heard around the world.

Amateurs have often been the "news" sources from places that have suffered storm damage or earthquakes. If it hadn't been for a radio amateur it could have been several hours before anyone knew that Darwin had been flattened by Cyclone Tracy. The cyclone was being watched by the weather bureaux but was not expected to pass over Darwin at all.

Amateurs sent out the first news from the Alaskan earthquake in 1963 and kept the world in touch with Fiji when it suffered cyclone damage a year or so ago as well as from many countries suffering the trauma of armed conflict. These amateurs could have had their first experience of mobile operation in a contest such as the John Moyle Field day.

Although AHARS has operated in the Field Day from the same site for several years each time some of the radio equipment is different and each time some of the aerials are different. In this way the members participating can find out how well or poorly their transceivers or aerials work from a battery or generator. This year three new aerials were tried (and one found wanting due to poor connectors) and two newly bought "rigs" which all worked efficiently.

All the operators commented that the number of stations heard was down on last year. Perhaps this was due to the fact that the results of last year's contest had not been published before this year's weekend exercise, perhaps not. It is an incentive to know how your group compared with the others but it is not essential.

AHARS operates for 24 hours in the multi-operator section on HF only. The locations we use is not in a suitable place for VHF contacts so, despite their higher scoring points we cannot participate in the Open section. We were pleased that a number of our members at home operated in the 6-hour sections and made contact with us. We also enjoyed making repeat contacts with other 24 hour stations. Like most other groups participating in the Field Day we had the chance to explain the idea of the contest to a number of people around the world. All in all we had a great weekend in almost perfect weather for outdoor activities.

The first photo (of Steve VK5ZHT) shows him operating during the evening on 80 metres from a tent out in the scrub. Although Steve has a limited licence he can use HF as a club member. Maybe the experience on HF in the Field Days will encourage him to upgrade.

The other photo is a bit of a giggle. Although we were an all HF station for the contest there were a surprising number of handheld radios on site – used to tell everyone when the kettle was hot, of course.

If you are in Adelaide for the third Thursday of any month why not come to a meeting of AHARS? It is held at the Blackwood High School in Seymour Avenue and starts at 7.30. We will make you welcome.

News from the Moorabbin & District Radio Club

MDRC hamfest

By the time you're reading this, the MDRC Hamfest will be history. Thanks to those who set up, packed up and manned stalls to make the day a success.

Thanks VK3ALE

After many years of service, Paul VK3ALE has decided to take a break from club activities. Paul has left a big gap that will be difficult to fill, and we wish him well for the future.

Changes for APC Newsletter

Paul's departure meant that the positions of secretary and APC newsletter editor became vacant. At the time of writing the former is vacant, but the APC editorship has fallen to yours truly.

I hope that under my stewardship the standard of APC can be maintained and improved. The committee has decided that we will have six newsletters per year. These will be published in February, April, June, August, October and December, to reach members just before that month's general meeting.

APC includes club news, general and practical articles on many aspects of amateur radio and is another membership service of MDRC. Articles for inclusion can be sent to the address at the bottom of this column.

MDRC in local paper

Amateur radio received some publicity in a local paper last month. The occasion was the John Moyle Field Day, for which we established a portable station.

The article appeared in the Moorabbin Standard for April 3. A good picture was published. The article explained the John Moyle Field Day well and pointed out our back-up role in providing emergency communication.

Unfortunately the article, titled *Hamming up the waves*, included time-worn clichés that did not portray us in an entirely positive light. Examples include: 'In this electronic age of Internet and e-mail, radio operators may be seen as old hat. But a dedicated band of enthusiasts proved that radio still rules the waves', and (the MDRC) 'attracts a broad range of enthusiasts, particularly people who have served as communications specialists in the army'. The photo was captioned 'Is there anybody there', as if we were trying to talk to extra terrestrials!

Despite the article not being entirely as we would have liked, we are firmly of the view that the cure to fixing the common misperceptions of amateur radio (as reflected in the article) is more publicity, not less.

Peter Parker VK3YE
Publicity Officer
Moorabbin & District Radio Club
parkerp@alphalink.com.au
(03) 9569 6751

South East Radio Group - Convention 2001

37th Annual Amateur Radio Convention & Australian Fox-Hunting Championships

Queen's Birthday Weekend 9th – 10th June 2001
A&H Showhall, Pick Avenue, Mount Gambier

For full information including
the complete FoxHunt program which has been updated to include a
NEW A.R.D.F. EVENT
Access SERG URL:- http://serg.mountgambier.org

For further information including bookings of tablespace for traders, exhibitors or individuals, please contact Convention Coordinator Wayne VK5ZX

Tel (08) 87254335 or mobile (0407) 718908

Radio Amateurs Old Timers Club

Associate Membership Qualification change

In November 2000 the Radio Amateurs Old Timers Club Australia changed its rules to allow a new grade of membership, Associate Membership, to all radio amateurs aged 60 years or more who have held, or been qualified to hold, an amateur operator's licence for a minimum of 10 years.

Subsequently, as a result of submissions, the committee has further discussed the qualifications for associate membership and agreed that, for a number of reasons, the age 60 qualification should be deleted.

Therefore, effective immediately, Associate Membership of the Radio Amateur Old Timers Club Australia is open to all radio amateurs who have held, or been qualified to hold, an amateur operator's licence for a minimum of 10 years.

Current subscriptions, which fall due on 1 April each year are: Joining fee $2.50; and annual subscription $8.00 (or $15.00 for two years). Life Membership is available for $100.00.

Application forms, complete with details of the Club's Constitution are available from the Honorary Secretary, Arthur Evans VK3VQ, 3/237 Bluff Road, Sandringham Vic 3191 on receipt of a stamped, self-addressed envelope.

Telephone enquiries will be welcomed by the Secretary, Arthur VK3VQ on 03 9598 4262, or President, Allan Doble VK3AMD, on 03 9570 4610

RAOTC Committee Re-elected

At the annual general meeting, and luncheon, held on 9th March 2001, the RAOTC Committee was re-elected unopposed.

The committee for the ensuing year is Allan Doble VK3AMD, President; Bill Roper VK3BR, Vice President and Membership Secretary; Arthur Evans VK3VQ, Secretary and Treasurer; Stewart Day VK3ESD, OTN Magazine producer; Ron Fisher VK3OM, Broadcast Co-ordinator; Bill Clarke VK3ZLN; Alan Cook VK3AUC; and John Fullagar VK3AVY.

ALARA

Christine Taylor VK5CTY
VK5CTY@VK5TTY or geencee@picknowl.com.au

The ALARA Contest — new date

As was forecast in this column the ALARA Contest will be held on a new date this year in the hope that conditions will be better.

The Contest will be on Saturday 25th August through to Sunday 26th August. It will start at 6.30 UTC and run till 1159 UTC on the Sunday. For those on EST the contest will start at 4.30 pm Saturday and run till 10.30pm on Sunday. In VK5 and VK8 start will be 4.00 pm and close at 10.00 pm the next day. In the West it will be from 2.30pm Saturday to 8.30 Sunday, while in New Zealand the times will be from 6 00 Saturday evening to a minute before midnight on Sunday night. As we did last year we will be able to have repeat contacts with the same station as long as there has been a lapse of an hour since the previous one.

We hope that the longer contest will encourage more stations to take part. We also hope that falling so soon after the Remembrance Day Contest everyone will have their rigs all prepared and ready to run. A Contest that runs for 36 hours is an innovation but with members of ALARA scattered all over the globe it is hoped that this way, for all of them there will be an operating time that suits them, and with two evenings on 80 metres the VK stations will have two chances instead of just one to make contact.

Let us make this the best ALARA Contest ever. If not, it may be a case of "use it or lose it" as we have been very disappointed in the number of participants and the number of logs submitted in the last few years.

It is a friendly contest; everyone has time to chat. Please participate.

Computer problems

Having had computer problems over the last few months this list of 'definitions' was apropos.

Log on - make the barbie hotter
Log off - don't add any more wood
Monitor - keeping an eye on the barbie
Download - get the firewood from the ute
Floppy disk - what you get if you lift too much firewood at a time
Window - what you shut when it is cold
Screen - what you use to keep the mozzies out
Byte - what the mozzies do
Bit - what the mozzies did
Megabyte - what the Townsville mozzies do
Chip - a bar snack
Microchip - what is left in the bag after you have eaten the chips
Laptop - where the cat sleeps
Software - plastic knives and forks to save the washing up
Hardware - real stainless steel knives and forks
Mainframe - what holds the shed up
Mouse - what eats the boxes in the shed
Web - what the spiders in the shed make
Web site - the shed or under the verandah
Cursor - the old bloke that swears a lot
User - the neighbour who keeps borrowing things
Server - the person who tells you when the barbie is ready
Mail server - the OM who tells you when the barbie is ready
On line - when you get the laundry hung out
Off line - when the wind blows the clothes off the line
Search engine - what you do when the car won't go
Upgrade - a steep hill

The John Moyle Field Day

Each year in March a number of VK5 YLs who are also members of the Adelaide Hills Amateur Radio Society participate in the Field Day. Although we do spend most of our time on kitchen duties we do also have the opportunity to operate as the photo of Tina VK5TMC on the 40 metre rig shows. Tina's favorite time is in the early morning session before breakfast. Because the Field Day is divided into three hour segments it is important to make some contacts in the 5.30am to 8.30am time slot.

Not everyone likes our Vegemite

In the DL-YL newsletter there was an article written by Gertrud DK8LQ about her first taste of our famous breakfast treat.

Oh dear, she did not like it al all!!

She said it looked like "Nutella" but definitely didn't taste at all like that,

Gertrud was introduced to the delicacy by June VK4SJ who had taken over a basket of Aussie goodies like honey and marmalade, and "Vegemite" for Gertrud and Horst to experience.

We cannot understand why people from the other side of the world do not like our favorite breakfast toast spread, can we?

continued on page 33

Technical Abstracts

Gil Sones VK3AUI
30 Moore Street, Box Hill South, Vic 3128

Pseudo Stereo CW Reception

A technique for enabling an operator to separate CW signals by means of stereo like effects has been experimented with for over 40 years.

Those working on the technique have included G6CJ (SK),PA0CX, and G3OTK.

In the Technical Topics column of Pat Hawker G3VA in Rad Com February 2001 Chas Fletcher G3DXZ provided a simple circuit for a pseudo stereo adaptor using a single TL074 quad op amp. The circuit makes use of a pair of self powered computer stereo speakers for the audio output.

The circuit is shown in Fig 1. and it consists of a pair of Sallen Key filters. The filters have a turn over frequency of 600 Hz. There is one low pass filter and one high pass filter. An inverting amplifier is included in one side so as the 600 Hz tones from each side add. The active speaker power supply was used to power the circuit.

The speakers were setup so as to be at two corners of an equilateral triangle with the operator at the third corner. Tones above and below 600 Hz appear to come from the sides with the centre being the 600 Hz beat note of the desired signal. Headphones could be used if desired.

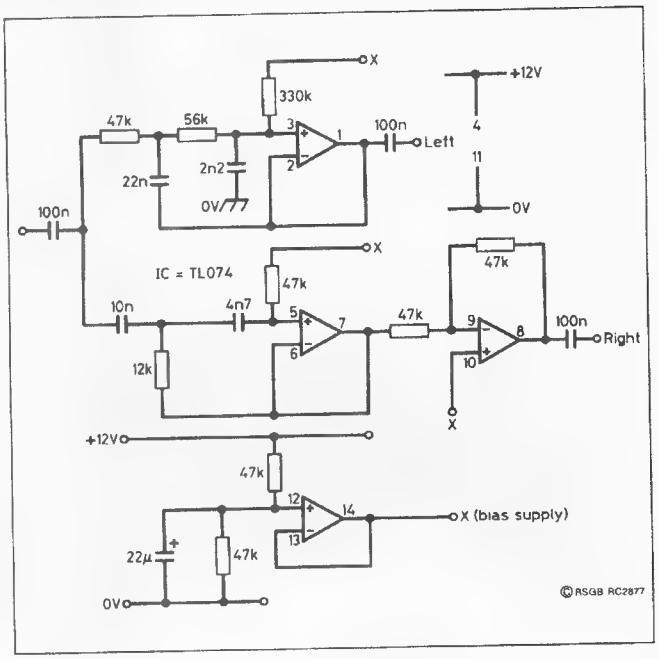


Fig 1. Pseudo Stereo Adaptor.

Preamp Supply Current Limiter

Masthead preamps are often supplied with power through the coax which minimises the cabling required.

However the supply can be a problem if accidentally shorted out when making adjustments. In CQ TV February 2001 John Lawrence GW3JGA described a current limiter circuit for a masthead preamp.

The limiter circuit is shown in Fig 2. The values of L1 and C1 are given for use on the 1296 MHz band. L1 is made from 6 cm of 28 swg enamelled copper wire wound on a 3 mm former so that it is only slightly longer than its diameter.

To set the current limit RV1 is adjusted to a point just before a drop in output voltage is detected. When a short is applied the current will then be limited to only a small amount greater than the preamp draws normally. The circuit resets itself when the short is removed.

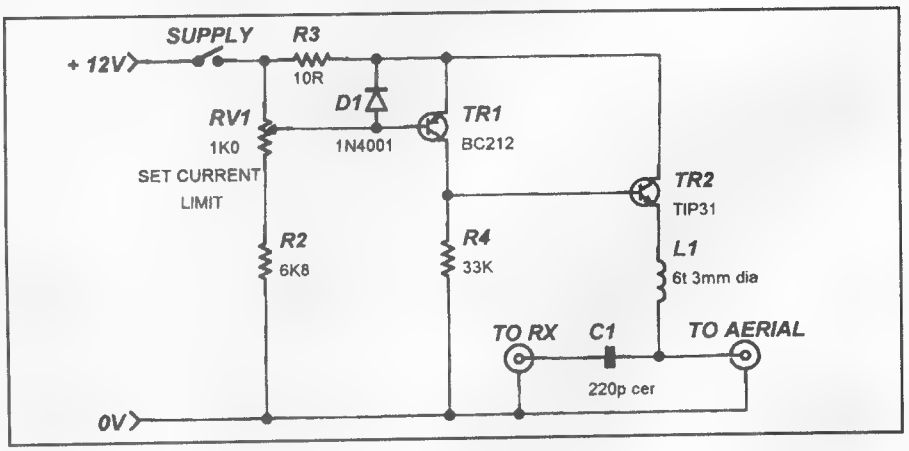


Fig 2. Current Limiter

CAT Interface

A CAT interface for Yaesu transceivers appeared in the October 2000 edition of CQ DL. The author was Hubert Appenmaier DL9GAY. The CAT system is used with many recent Yaesu transceivers such as the FT1000 (not MP) ,FT890, FT840, FT757 GX11 and others. While a Yaesu interface is available you may like to make your own.

The circuit of the interface is given in Fig 3. The interface is a simple circuit which goes between the computer serial port and the transceiver CAT socket. A control program is required to allow control of the transceiver from the computer.

The capacitors are 10 mF electrolytics and tantalum electrolytics with a working voltage of 16 Volts or greater would be suitable. The other components are all standard parts and should present no difficulty.

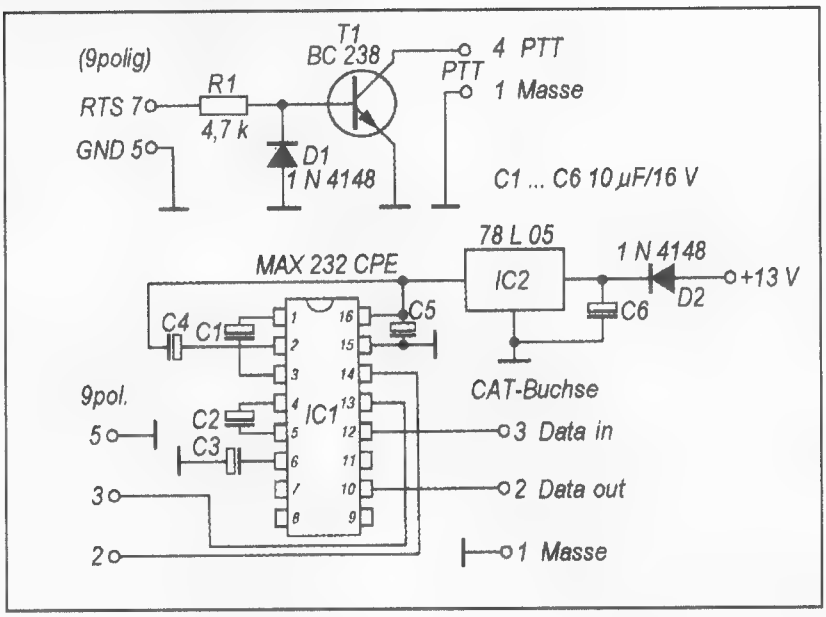


Fig 3. CAT Interface.

Optoisolated Icom CI-V Bus Interface

An interface circuit for the Icom CI-V bus appeared in the January 2001 edition of CQ DL. The author was Bernie Arndt DF4NR. The circuit features optoisolation between the transceiver and the computer serial port.

The circuit is shown in Fig 4. The parts used are all commonly available and those not given in Fig 4 are given in Table 1. Substitutions should not be a problem.

Table 1

C1	1mF 25VW
D1,D2	1N4148
D3	4.7 V Zener
IC1	74HCT04
R1,R4	390 Ohm
R2	3.9 KOhm
R3	4.7 KOhm
OK1, OK2	4N35, CNY17-4.

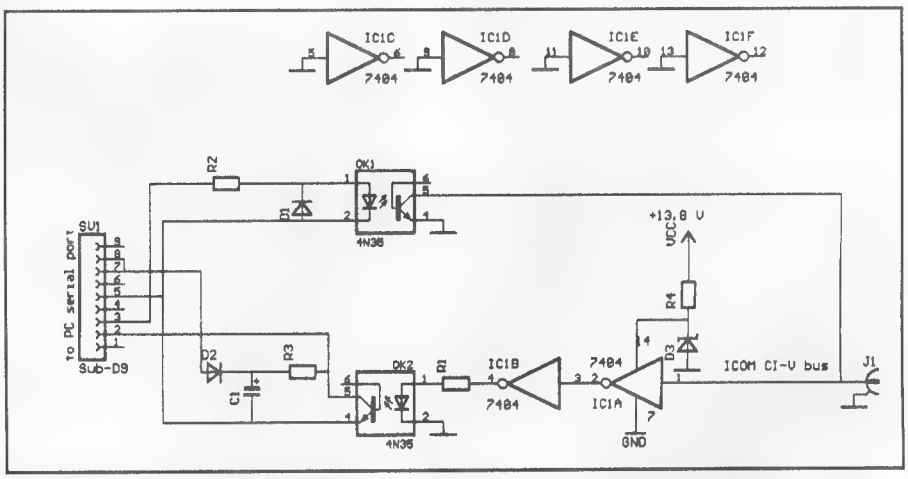


Fig 4. Optoisolated CI-V Bus Interface.

Federal Awards

***G.A. Taylor Award* for service to Amateur Radio to**

Neil Penfold VK6NC

***Ron Wilkinson Achievement Award* to**

Trevor Niven VK5NC, Russell Lemkie VK3ZQB and Colin Hutchinson VK5DK for their experimental work at 25GHz

AMSAT

Bill Magnusson VK3JT

Renewed Interest in Oscar-10

AMSAT's new high-orbit "flag-ship" Amsat-Oscar-40 has stolen the limelight recently but it's as well to remember that the old faithful Oscar-10 is still up and running and providing some good DX for those willing to study and comply with its idiosyncrasies.

AO-10 caused great excitement when it was successfully launched in June 1983 and opened for general use a short time later. All previous amateur radio satellites had been in Low Earth Orbit (LEO). Twenty minutes access time was considered to be excellent.

Oscar-7 held the record at that time. Its LEO orbit allowed a maximum access time of about 26 minutes on an overhead pass. The high altitude, highly elliptical orbit of Oscar-10 meant we had to re-think our operating practices. Until that time most operators did not have a computer. We predicted when a satellite was due to rise by simply adding 90 or so minutes to the last rise time and had little idea where it was in the sky except that the passes advanced from east through overhead to west.

Chart-like devices with transparent overlays such as the "Oscar-Locator" were useful but limited. Oscar-10 forced us to consider squint angles, transponder schedules, mutual DX footprints, better tracking and prediction methods and higher gain antennas. The rewards were many. Access times measured in hours instead of minutes. Strong, fade-free signals from overseas stations. Oscar-10's performance surpassed even the most optimistic predictions. For one test I used a 22 element cross-yagi on 145 MHz for reception and an uplink power of only 100 milliwatts into a 435 MHz, 20 turn helix antenna.

This 'flea-power' was not guess work . Graeme VK3NE was with me at our favorite holiday location near Eden, NSW. We fed a measured 10 W into the antenna via Graeme's professionally calibrated 20dB attenuator which was valid to 4GHz. Ten Watts was as low as I could crank my power level down and with that much power going directly to the antenna, the signal was booming back louder than the beacon, too loud. I was in danger of overloading the satellite receiver's AGC.

We tried 10dB attenuation first and with only one watt of uplink power the return signal was still louder than the beacon. The 20dB of attenuation did the trick and the return signal was about S-5 and perfectly readable. And Oscar-10 was near apogee and over 40 000 km away, "hovering' in the sky, requiring only infrequent manual corrections to the antenna direction. You could easily have a 15 minute DX contact anywhere into its giant, almost hemisphere-wide footprint without shifting the beams. In those heady days AO-10 was still under full control and the squint angle was optimal at apogee. That is, the satellite's antennas were looking straight at us, the squint angle was zero degrees.

Many home-brew stations used equipment built from kits with power outputs as low as a watt or two.

Oscar-10's "mode-L" transponder was a real ground breaker too. It introduced many amateur radio satellite operators to the exciting world of microwave communications. It would be another 5 years before Oscar-13 was to take the microwave scene one step further to "mode-S", 2.4GHz. The French satellite Arsene briefly provided a similar opportunity a couple of years later. AO-10, AO-13 and Arsene were responsible for a huge upsurge of interest in the microwave region among amateur radio satellite buffs. This is receiving a further boost today in AO-40.

Although I had a flutter on AO-10's mode-L, my first serious venture into microwave work was with AO-13 and then later Arsene. Their 2.4 GHz transmitters provided good signal strengths to well equipped stations. I used a 1.6 metre dish with a G3RUH designed two and a quarter turn helix feed. The 0.8dB noise figure pre-amp was fixed directly to the helix resulting in a system that could hear about 6dB of sun-noise in CW mode and the "S" mode transponder signals were around S-9 with an overall system noise floor of about S 2-3. The dish is still in use on AO-40. When its mode L/S system is activated, indications are that signals will be even stronger than those of the previous high orbit satellites. My dish is still ground mounted and manually aimed but this presents no problem when the satellite is at or near apogee and DX opportunity greatest. The satellite is barely moving in the sky., so manual pointing is an effective option. The 3-axis stabilization on AO-40 will make it more desirable to have a tracking system for the dish but, for the moment it will be staying on the ground. It's hard to describe just how good "S" band is as a downlink. There is no man-made noise or atmospheric static. Just a gentle hiss coming from the loudspeaker. The signals stand right out and even quite weak ones are readily readable.

Due to a launch problem, Oscar-10 spent more time than planned where it

The AMSAT group in Australia.

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an email mailing list for breaking news and such things as software releases. Members use the AMSAT-Australia HF net as a forum.

AMSAT-Australia HF net.

The net meets formally on the second Sunday evening of the month. In winter (end of March until the end of October) the net meets on 3.685 MHz at 1000utc with early check-ins at 0945utc. In summer (end of October until end of March) the net meets on 7.068 MHz at 0900utc with early check-ins at 0845utc. All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK,
GPO Box 2141, Adelaide, SA. 5001.
Graham's email address is:
vk5agr@amsat.org

suffered seriously from radiation damage. Finally after 3 years of service, the main computer memory gave up as more and more memory cells were corrupted and the ground stations lost control. The batteries ran down because AO-10's solar panels could no longer be oriented to the Sun. Since that time AO-10 has been at the mercy of the natural drifting of its orbit and its attitude. It "goes to sleep" when the solar panels are not lit and comes back to life when they are once again in sunlight. The batteries have long since lost their ability to store energy so this switching often happens rather quickly.

Oscar-10's situation puts severe limitations on the times effective communications can be achieved. You have to be prepared to study and recognize these if you are to do any good . But it can be done and many good DX contacts are being held daily. There are two main tests you can do. First, listen for the beacon transmitter around 145.810MHz. The beacon should be well above your noise floor and if so, you will notice a slow rhythmic fading. The satellite's spin rate has dropped to almost zero and it will probably be the pitching and yawing which will be causing the fades. The second important thing is to listen carefully for any signs of a change in the frequency of the beacon. The most likely cause of this will be uplink signals causing the voltage to drop to the downlink transmitter at times when the solar panels are barely supplying the transponder with enough power. The effect is called FM-ing because to some extent it frequency-modulates the beacon and all signals in the passband. If you hear this effect in operation or if it happens when you uplink a signal yourself, please do not use Oscar-10. The presence of another signal in the uplink passband can only make matters worse. Try another time. If you can hear the beacon loud, clear and steady (it is an un-modulated carrier most of the time) then it may be OK to try uplinking a signal and listening for your downlink.

The attitude of the spacecraft is unknown. It could be pointing anywhere, and probably not directly at you. Oscar-10 is half a metre thick and roughly triangular. Most of the antennas are on one of its 'triangular' surfaces which used to be directed at Earth when AO-10 was under control. There are two antenna systems for 2 metre operation. An omni-directional whip and a high-gain system consisting of 3 mono-poles with reflectors. The mono-poles are too big to be located with the other antennas and they stick out around the circumference of the spacecraft on the points of the 'triangle'. Effectively this means that you can "see" the two metre antennas at most times whatever the attitude of AO-10 and whichever system, omni or high gain happens to be randomly turned on. The 70cm receiving antenna however could be on the other side of AO-10 when you are listening, so you would receive a good signal from the beacon but not be able to "get-into" AO-10 even with very high power.

Another odd effect is due to AO-10 presenting a different aspect or attitude to widely separated stations. Operators in America or Europe for example would probably not "see" AO-10 in the same attitude as those in Australia. Operating conditions would be quite different. One station may be able to hear their own signal and that of the DX station (and the beacon) quite well and yet the DX station, even though hearing you strongly, may not be able to make themselves heard through the satellite at all. Occasionally AO-10 will be in the right attitude to service both ends of a contact equally well. Then it is a pleasure to operate on Oscar-10 but the conditions can change rapidly. So be prepared. Listen carefully to the beacon first and then scan over the passband. Don't waste your time if you can't hear the beacon or your own downlink. If you persevere you will be rewarded with some fine DX contacts on the ol' faithful Oscar-10 ... still going strong in space since June-16, 1983. The only mode in operation is the old "Mode-B", that is 70cm band uplink and two-metre band downlink. The uplink passband (your transmitting band) extends from 435.030 to 435.180 MHz. The downlink passband (your listening band) extends from 145.825 to 145.975 MHz.

One other point to remember. The transponder inverts the uplink passband. This means that a signal near the bottom end of the uplink band would appear near the top end of the downlink band. Most QSOs start around the middle of the passband for this reason and this is as good a place as any to begin listening for signals. Another effect of the inversion is that a lower sideband SSB uplink signal will appear in the downlink as an upper sideband signal. This is the preferred operating mode, LSB up and therefore USB down. Expect to hear upper sideband signals in the two metre downlink passband. SSB and CW are the preferred operating modes on AO-10. Continuous modes like FM and AM should not be used. More exotic continuous modes like SSTV, RTTY or PSK31 would be pushing things a bit now that AO-10's batteries are defunct and it is reliant on a constant supply of sunshine for its operation. Actually they were never encouraged on AO-10 or on AO-13. Inversion of the passband is a common practice on amateur radio satellites. It is used to partially counteract the effects of Doppler shift. At nearly 18 years of age, Oscar-10 is the oldest amateur radio satellite still in operation. It has outlasted many of its younger companions in orbit. Next in line is UO-11, launched the following year and still going strong. As Oscar-10 moves closer to its 20 year anniversary it is nice to see a resurgence of activity on this remarkable, veteran amateur radio satellite. Try it yourself. It would be a nice way of saying thank you to the team of amateurs who conceived, designed, built, tested, launched, commissioned and maintained Amsat-Oscar-10 so long ago...but, don't expect to do it using 100 mW !!

Oscar-40 Developments.

The commissioning of Oscar –40 is moving quickly and critical events occur almost daily. The information is available on the Internet and on the Packet Network, but the latter requires someone to do the transfer from the Internet source. So if you are serious subscribe to the AMSAT-BB email service on the AMSAT-NA website, http://www.amsat.org, or just regularly check this web site. One of the satellite's transponder combinations should be opened for experimental service soon. This will most likely be mode L/S, 1.2GHz up and 2.4GHz down. Given the discussion on the AMSAT-BB, mode L/S will be very popular. There has been much swapping of ideas on aerials, pre-amps, converters and radios for use on these frequencies recently. I'll devote some space in next month's column to details of my own preparations for this mode and some other people's thoughts on this topic.

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YAESU

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D 3450

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2508 DPS S/COL

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Features:

- Tx: 144-148MHz, Rx: 140-174MHz • RF Output: 5W with supplied 700mA/h NiCad pack
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D 3648

2 year warranty

$345

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NEW FOR 2001

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Another Yaesu transceiver breakthrough, the new FT-1500M blends an efficient transmitter with an almost bullet-proof receiver front end, and is packaged in rugged die-cast aluminium casing. You get powerful 50W RF output, direct keypad frequency entry, Alpha-numeric memory labelling, easy data interfacing, and much, much more.

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- High-performance receiver front-end circuitry using Yaesu's renowned Advanced Track Tuning (ATT) tracking bandpass filter design.
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D 3638

2 year warranty

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SAVE $37

All Yaesu products listed are priced in Australian dollars, and are not stocked in Dick Smith Electronics stores outside Australia. Check our web site www.dse.com.au for further ordering information.

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2508 DPS S/COL

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The Amateur Radio Service exists for the purpose of self training, intercommunication and technical investigation. It is carried out by amateurs who are duly authorised people interested in radio technique solely with a personal aim and without pecuniary interest.

The Wireless Institute of Australia represents the interests of all radio amateurs throughout Australia. National representation is handled by the executive office under council direction. One councillor for each of the seven Divisions. This directory lists all the Divisional offices, broadcasts schedules and subscription rates. All enquiries should be directed to your local Division.

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Broadcast schedules

All frequencies MHz. All times are local.

VK1WI: 3.590 LSB, 146.950 FM each Sunday evening from 8.30pm local time. The broadcast text is available on packet, on Internet *aus.radio.amateur.misc* news group, and on the VK1 Home Page http://www.vk1.wia.ampr.org

Annual Membership Fees. Full $77.00 Pensioner or student $63.00. Without *Amateur Radio* $49.00

From VK2WI 1.845, 3.595, 7.146*, 10.125, 14.160, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (* morning only) with relays to some of 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday at 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2 m, 70 cm, 23 cm. The broadcast text is available on the Internet newsgroup *aus.radio.amateur.misc*, and on packet radio.

Annual Membership Fees. Full $78.00 Pensioner or student $61.00. Without *Amateur Radio* $47.00

VK3BWI broadcasts on the 1st Sunday of the month at 20.00hrs Primary frequencies, 3.615 DSB, 7.085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 438.225, and VK3RMU 438.075. Major news under call VK3ZWI on Victorian packet BBS and WIA VIC Web Site.

Annual Membership Fees. Full $78.00 Pensioner or student $61.00. Without *Amateur Radio* $47.00

VK4WIA broadcasts on 1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 10.135 MHz SSB, 14.342 MHz SSB, 21.175 MHz SSB, 28.400 MHz SSB, 29.660 MHz FM (rptr), 147.000 MHz, and 438.525 MHz (in the Brisbane region, and on regional VHF/UHF repeaters) at 0900 hrs K every Sunday morning. QNEWS is repeated Monday evenings, at 19.30 hrs K, on 3.605 MHz SSB and 147.000 MHz FM. On Sunday evenings, at 18.45 hrs K on 3.605SSB and 147.000 FM, a repeat of the previous week's edition of QNEWS is broadcast. Broadcast news in text form on packet is available under WIAQ@VKNET. QNEWS Text and real audio files available from the web site

Annual Membership Fees. Full $85.00 Pensioner or student $72.00. Without *Amateur Radio* $56.00

VK5WI: 1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.700 FM Mid North, 146.800 FM Mildura, 146.825 FM Barossa Valley, 146.900 FM South East, 146.925 FM Central North, 147.825 FM Gawler, 438.425 FM Barossa Valley, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 USB, 7.065 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. 3.585 MHz and 146.675 MHz FM Adelaide, 1930 hrs Monday.

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VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz, Country relays 3.582, 147.200 (R) Cataby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury).147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 14€ 700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900,147.000, 147.200, 147.250 and 147.350 MHz..Also in "Real Audio" format from the VK6 WIA website

Annual Membership Fees. Full $69.00 Pensioner or student $59.00. Without *Amateur Radio* $38.00

VK7WI: 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.625 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart), repeated Tues 3.590 at 1930 hrs.

Annual Membership Fees. Full $88.00 Pensioner or student $75.00. Without *Amateur Radio* $55.00

VK8 Northern Territory (part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz).

VK2 Notes

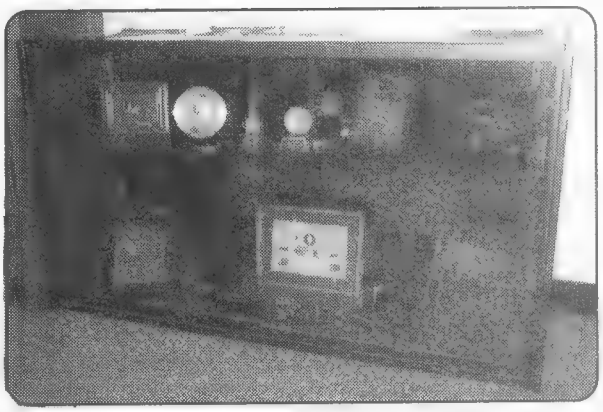
Pat Leeper VK2JPA

By the time this gets to print there will be a new VK2 Divisional Council. There was no need for an election as only nine members nominated for the nine Council positions.

The new councillors are : Terry Davies VK2KDK, Brian Kelly VK2WBK, Patricia Leeper VK2JPA, Geoff McGrorey-Clark VK2EO, Chris Minahan VK2EJ, Andrew Scott VK2TWO, John Turner VK2WRT, Ken Westerman, Barry White.

At the Annual General meeting, Peter Naish, the out-going Federal president, will unveil the mementos presented to the WIA as host at the IARU Region 3 Conference in Darwin last year. They will remain on display in the VK2 premises.

That's all for this month, perhaps there will be a new correspondent for VK2 next month.



"QRM"VK7 notes

Ron Churcher, VK7RN

First – a notice for anyone sending mail to the VK7 division. We have received notice from the postman that all suffixes are now redundant on postbox addresses so now it's just P.O. Box 371, Hobart.

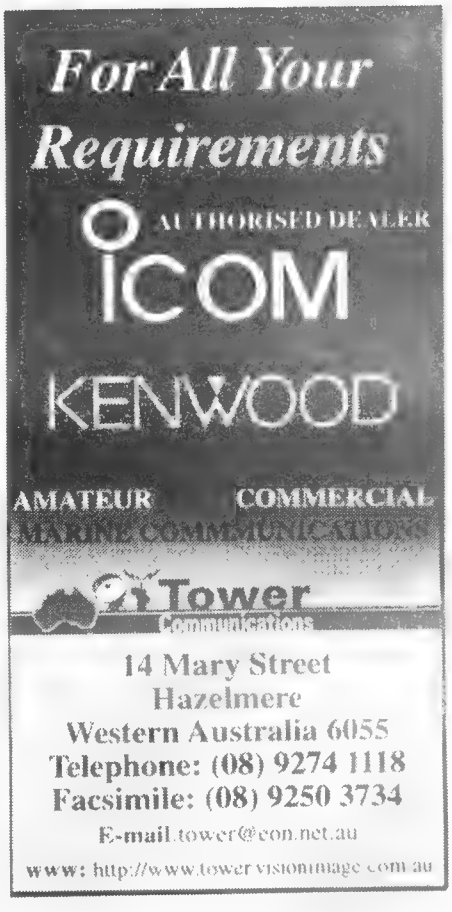
During the early part of April interesting atmospheric conditions prevailed over Bass Strait resulting in mainland 2 metre amateurs and repeaters becoming "local" in northern Tasmania. 6 metres was also a good band. It would be great if it could stay that way.

Our Hobart branch had a very busy time early April when they manned a WIA information stand at a big Hobby Exhibition at the Derwent Entertainment Centre. The stand was in a very prominent position in the foyer and showcased all aspects of our hobby. The organizer, VK7JGD, said that they felt it was one of the best ever PR activities and thanked the large number of amateurs who rallied to the cause. As a result the exam classes now running in Hobart under the direction of Richard Rogers, VK7RO, are expected to result in many more amateurs on air in the future.

Our repeaters, being in very exposed conditions on mountain tops , while giving very good coverage, are liable to weather damage. VK7RMD on Mt. Duncan in the north-west's Dial Range needs some TLC on its antennas but also needs able bodied men to climb the 3 ° thousand feet to administer it. Some of us are getting a bit long in the tooth for the exertion. Joe, VK7JG, now has the Mt. Barrow (1470m) east of Launceston in better than ever condition and working into over half of Tasmania well.

We are fortunate in having Rex Moncur, VK7OM, making a study of EMR as it affects amateurs and the new ACA guidelines. He has addressed the Southern and the North-west branches so far and is speaking at the May meeting in Launceston. In his very practical way of explaining these guidelines he answered a lot of out queries on the ramifications for our own stations.

Cheers for now, Ron Churcher, VK7RN



VK4 Notes

Qnews

by Alistair Elrick VK4MV

Thank you Gordon

WIA Federal IARUMS Coordinator, Gordon Loveday VK4KAL, has retired after many years in this position, concentrating on the identification and removal of intruders from the exclusive HF amateur bands.

This can at times be a thankless job, with very few intruder reports from the general Amateur fraternity to back up the application to have these intruders removed. Yet many Amateurs benefit from such removals.

WIA Victoria President, Jim VK3PC, said, "the years of dedicated voluntary work performed by Gordon VK4KAL needs to be recognised and acknowledged".

Initially Gordon was the VK4 Intruder Watch Coordinator before being elevated to VK Coordinator, one in which he set goals including an increase in Intruder Watch Observers throughout Australia.

Gordon, all radio amateurs owe you a debt of gratitude. Please look back on your time at IARUMS Coordinator as being a success

WIAQ QSL Bureau

Shirley Gulley and husband David, VK4DCG, run the Inwards Bureau. Where as the Outwards bureau is operated by Steve Campbell VK4SRC with the help of XYL Kaylene.

Please ensure that all mail to the bureau is marked either Inwards or Outwards, not just to the QSL Bureau. A return address also makes it easier to record the article in the mail log. All mail SHOULD always be sent to the official PO Box, as per the latest Division Directory page in AR, NOT home addresses.

Dalby And District

TeleText page 910

Mike VK4XT says the Dalby club has a Transworld repeater, but he's lacking info on the beast! If you know ANYTHING about Transworld repeaters please contact Dalby and VK4XT.

Their Transworld is currently on 153/158 MHz. The repeater is made up of separate transmitter and receiver. The labels say Serial No# TM101A 4A027.for TX and No# RM101A 4A033 for RX.

To convert it to an amateur band repeater a copy of the circuit diagrams and specs would make life much easier. Of course a copy of some sort of service manual would be even better. Again that's Mike VK4XT of the Dalby AR Club DALBY AND DISTRICT. President is Reg VK4AQU Phone (07) 4662 2193

Sunshine Coast

TeleText page 909

http://www.ozemail.com.au/~vk4len/scarc/

Last month the 146.850 MHz repeater was returned to the hill in the pouring rain and mist by vk4swc and vk4alf. All cavities having been stripped, cleaned and realigned by VK4ARU.

The clubs 438.075 MHz repeater is only operating on a 4.5 dB gain antenna and tests are continuing with the 438.175 MHz repeater at Noosa, linked to 146.850 MHz.

It's a bird, it's a plane it's a Presidential Plane no less!

The President of the Tablelands Radio and Electronics Club, Bill VK4WL, appeared in the sky during the 2001 Easter break. He had taken delivery of his new ultralight aircraft and after getting aquainted with the new bird flew up the coast back to his home at Mareeba FNQ.

Bill had his FT-530 onboard set up for 2m and 70cm operations scanning 146.5MHz as a priority channel and if plans to activate several repeaters during his flight are successful, then it could be the start of many more high level contacts. So, keep your ear on ch50 or your local repeater for Bill VK4WL, Aeronautical Mobile!

Radio scouting

http://jota.scouting.net.au

It was standing room only at the Queensland Scout Centre recently where a throng of well wishers, family, and Scouting VIP's gathered to witness the investiture of Ross Tutin as a Leader, and his appointment as QLD JOTA/JOTI Co-ordinator.

After completing Year 12 in Toowoomba last year, Ross is now resident in

Brisbane, where he is undertaking tertiary studies.

Last year Ross was appointed assistant to the QLD JOTA/JOTI Co-ordinator, and was awarded the Queen's Scout. Earlier this year he attended the 8th National JOTA/JOTI Conference where he represented QLD and recorded the Conference minutes.

A 'telegram' from the National Co-ordinator, JOTA/JOTI and outgoing QLD JOTA/JOTI Co-ordinator, Steve Watson VK4SGW was read out by Branch Commissioner Youth Activities, and past QLD JOTA Co-ordinator, Ian Lightbody.

Addressing the crowd, Ian affirmed his confidence in Ross stating 'JOTA and JOTI are in safe hands'. All showed their approval by raising the roof with a shattering "BRAVO"!

Tower Problem

WIAQ Past-President Col Gladstone VK4ACG received a visit from Brisbane Town Planning people about his antenna array and upon receipt of a letter of instruction, will have two months to dismantle his antenna mast and structure.

Federal Councilor for WIAQ, David Jones VK4OF, Emailed Brisbane City Council official Juergen Hamisch, requesting a meeting immediately and advised him that the WIAQ will not accept such unannounced visits, especially from officers whose standards of courtesy require more than was done. David, working on tower matters for Col and also Ken Fuller visited Brisbane City Town Planning with Col and had a lengthy session with senior officials.

The outcome overcame Col's problem and defined the standard building codes in relation to AR masts. This being the right to a 10 metre structure if the mast is freestanding (in their terms this means more than a metre from the class 1

dwelling), or 3.5 metres above the roofline if attached. Negotiations clarified that the mast is often attached at fascias, but that the 10 metres or 3.5 metres would still be applicable. This would take account of those with steeply sloping blocks.

The submission made would go with all others to Town Planning assessment, when next the town plan was reviewed. The officer was reasonably happy with the suggestions made, and considered the approach was reasonable. However, objections will still have to be allowed.

David will be meeting with the Deputy Mayor and Town Planning people of Pine Shire next, regarding the same issue.

73's from Alistair

VK3 Notes

Website www.wiavic.org.au Email wiavic@wiavic.org.au

By Jim Linton VK3PC

WIA Victoria AGM

A reminder that the Annual General Meeting will be held on Wednesday, 23 May, 2001.

An official notification and annual reports were supplied to financial members last month. See you at the AGM.

Science Show

WIA Victoria has been working with metropolitan radio club presidents to look at the viability of running an amateur radio stand at the Great Australian Science Show in August.

The show held at the Melbourne Convention Centre runs for several days and is visited by thousands of school students and teachers. WIA Victoria has made a tenative booking of a stand. It is an excellent opportunity to expose our hobby. If sufficient sponsorship and voluntary labour support can be found, this major public relations project will go ahead.

Meetings of club presidents were held on 4 and 18 of April, and indications are that there is support among the amateur radio fraternity for the venue. Further meetings will be held, and industry sponsorship that is vital for the exercise is to be sought.

Celebrating the Centenary of Federation

WIA Victoria is planning a special event station to participate in the Centennial of Federation, with an emphasis on the role radio communications has played in the creation of our nation. Activation of a special event station by WIA Victoria will give due recognition to Australian amateur wireless experimenter H. Walter Jenvey.

ALARA (continued)

Some travellers' tales

Mary VK5AMD (and her OM Murray) spent a fortnight in the Philippines with a group taking Christ to kids. They met a lot of people, mostly away from the cities, and played a lot of games with the children while they shared their beliefs with them. In an earlier issue of AR Mention of Mary's kids club activities was made. She and Murray are very inventive in the field of entertainment for children. Their own kids must have had a marvelous growing up time.

It was their first trip overseas at all, so it was all a new experience. What amazed Mary the most was the traffic, the speed at which it went and the almost continuous use of the horns by the drivers.. The noise was horrendous yet it seemed to have the right effect. Mary also realised that, despite all the cars on the road almost none of them had dents!!!

Meg VK5YG and her OM David VK5OV's trip to Malaysia overlapped that of Mary. They were also amazed at the traffic, with pedestrians, man-carts, animals as well as cars, yet the traffic moved without any blockages.

Both of the travelers commented on the high humidity, which for South Australians is not the norm, but both also said you become accustomed to it after a while.

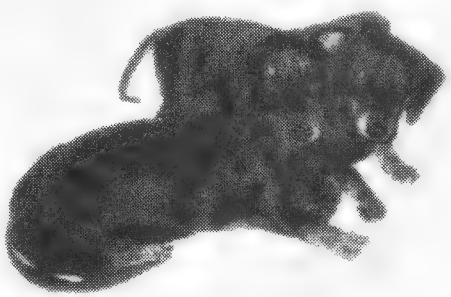
Most of our travellers' tales are of Europe of the UK so it has and will be interesting to hear more about Asia through their eyes on the Monday night Nets during the next few weeks.

Warning

If you are sending any cheques to our Treasurer, Bev VK4NBC, be aware that there is a new hazard in her household these days.

Meg VK5YG sent her renewal of subs with a cheque to Bev. A few days later she had a phone call. A very apologetic voice told her that the cheque had disappeared – into the tummy of one of the two puppies!!

Do not believe the innocent expressions on their faces>



Beyond Our Shores

David Pilley VK2AYD
Davpil@midcoast.com.au

Is there anyone out there?

I was hoping by now that I would have some feed back from members who subscribed to other world radio societies, but so far, no luck. March/April has been pretty quiet beyond our shores – it's a pity that the HF bands were much the same.

World Prices

Looking through the March editions of "QST" and the UK "RadCom", I began to wonder how the prices of Amateur Radio equipment compared with our own, especially with our dollar being at it's all time low.

I've tabled a few prices below. It is very hard to make comparisons with our own prices when only a few Amateur Radio stores in Australia advertise in A-R. They have obviously never heard of the great marketing cry "You've got to tell it to sell it" because "If you don't tell it you won't sell it". (My war cry when I was "in the business"). However, back to comparisons. In the prices below I have added 6% to the advertised U.S.A. prices as all States have Sales Tax and 6% is about average. The U.K. prices include their VAT (GST). For exchange rates I have used A$1.00 = US$0.50 and UKP0.35.

	US$ =	A$	UKP =	A$	A$
FT1500M	212	424	229	654	399
FT90R	392	784	309	883	599
FT920	1420	2840	1099	3140	2750
IC756PRP	2968	5936	1895	5414	6579
IC746	1378	2756	1395	3985	3420

As you can see, we get a pretty good deal on some equipment. Thank goodness we don't have to pay U.K prices.

Amateur Radio in Japan

The following was obtained from the JARL web site.

It appears that the Japanese were quite late starters to enter the field of Amateur Radio. According to the JARL, it was not until 1925 that unlicensed hams first started experimenting and researching Amateur Radio. The JARL was inaugurated in 1926 (this must be their 75th anniversary). In 1927 about 10 private experimental radio-telegraphy/ radio telephone stations were licensed JXAX (kankichi kusama) by the Government. The J1 – J9 prefixes were allocated by territory. These were subjected to strict regulations regarding frequency, power and operating procedures. Just before the outbreak of WW II there were only about 300 stations officially licensed. During the war these stations were of course closed. After the war the ban was lifted for reception only and it was not until 1952 that 30 stations were granted provisional licences. This spurred a very rapid increase and by 1994 there were over 1.4 million licensed Amateurs. To-day there are over 1.6 million, which is close to 50% of the world Amateur Radio population.

Japan has four grades of licence and they are known as the First, Second, Third and Fourth Class. Licences are renewable every 5 years at a cost of 500 yen. However an alien licence has to be renewed yearly. Applicants for a licence are subjected to examinations similar to our own. For the first 3 classes you need to know the Morse Code. First Class licence permits 1kW on HF, Second Class licence permits 200 watts and the Third Class licence only permits 50 watts with Telegraphy only. The Fourth Class is a Telephony only with a maximum of 10 watts. The Amateur Bands are similar to our own, except for 40 metres which is restricted to 7 – 7.1 MHz and 2 metres 144 – 146 MHz.

Visiting Japan

Yes! You can obtain permission to operate there. Applications have to be made through the JARL and can be obtained by e-mail from intl@jarl.or.jp The JARL recommend you request a Portable/Mobile 50 watt licence so that you can use it anywhere in Japan. If you do decide you want a high power fixed station then be prepared for a big questionaire, which will involve the station being inspected before operation.

The cost of the /P/M licence is 7200 yen.

RSGB makes Historic Changes

For the first time in 47 years the RSGB has made extensive changes to the Society's structure. 12 Regional Managers have been appointed and they will constitute the new "Board of Directors". This new structure has been designed to increase the Society's representation right across the United Kingdom and to strengthen the management of the Society in all aspects of its work. (Perhaps the WIA Board may like to review this for planning our future. Copies of the new Memorandum and Articles of Association and related Bylaws are available from the RSGB).

A Sad Loss

I expect many of you, like me, have enjoyed over the years the wonderful antenna books such as "The Quad Antenna", that was written by Bill Orr, W6SAI. Bill passed away on 24 January at the age of 81 but his books will be with us for many more years to come.

Europe Adopts 5 WPM

Europe Adopts 5 WPM as Morse Code Standard: The Conference of Postal and Telecommunications Administrations—CEPT—has effectively lowered the Amateur Radio Morse code test speed to 5 WPM for all European countries. The CEPT Radio Regulatory Working Group (WGRR), meeting last month in The Hague, adopted a revision of Recommendation 61-02 to include the 5- WPM standard.

The European Radiocommunication Office published the revised version of T/R 61-02 this month. The revision,

which establishes requirements for the issuance of a Harmonised Amateur Radio Examination Certificate (HAREC), reduces the Morse requirement from 12 WPM. "In revising what is known as the CEPT Recommendation T/R 61-02, it has in effect recommended to 44 European countries to adopt the 5 WPM standard," said Wireless Institute of Australia-Victoria President Jim Linton, VK3PC, who closely follows global developments in Amateur Radio Morse code trends. Additional information is available on Linton's Morse code watch site, http://www.wiavic.org.au/mcw .

More information on CEPT is on the ERO Web site, http://www.ero.dk .

"Boing Boing" Signals

I wonder how many of you suffered the "Boing Boing" QRM on the 12 metre band in early March? I was quite fascinated with it as it covered precisely only from 24890 to 24990 kHz. the entire 12 metre band It didn't really interfere with QSO's on the band, it just had this annoying noise that has been described as a noisy spring or a un-tuned guitar string ! The ARRL set the FCC watchdogs onto it and, thanks to successful direction-finding and identification by the FCC, it was eventually traced as a CODAR (Coastal Oceanic Dynamics Applications Radar) transmitter emanating from Honduras. (CODAR is a specific type of HF radar used to map ocean surface currents in coastal zones). The diplomatic efforts of the FCC set the wheels in motion and it was quickly removed from the 12 metre band with apologies. It seems the operator had dialed the wrong frequency!

(Just before going to press with this, "Boing Boing" was back in the 12 metre band – perhaps he is just now beaming in this direction).

In case you were not aware, the HF band segments exclusively allocated to the Amateur Service worldwide are 7000-7100, 14000-14250, 21000-21450, 24890-24990 and 28000-29700 kHz. There sure is a lot of housekeeping needed, especially in our 10 metre band.

WRTC

It has been announced that the next World Radiosport Team Championship will be held in Finland in July 2002 and is being organised by the Contest Club of Finland (CCF) and the Finnish Amateur Radio League (SARL). The contest stations will be located in the Helsinki area. In 1994 it was held at Seattle, Washington, USA. In 1996 at San Francisco and in 2000 in Slovenia. This is a HF event that is integrated with the IARU Contest held in July of each year and is both a CW and SSB event. Between 45 and 50 two-men teams will compete on a 'level' playing field, all having similar equipment. A great itinerary has already been prepared for both competitors and visitors covering the period from July 9 to 16. More information can be obtained on the Internet at www.wrtc2002.org

In both 1996 and 2000, Australia had a 2 man team competing. Wouldn't it be great if Australia could host such an event? We could offer the famous Traeger pedal powered equipment and set it all up in the outback...! Great tourist attraction!

WRC

The World Radiocommunications Conference is scheduled for June 2003 and is expected to be held in Caracas. This is possibly the most important Conference held that directly has a bearing on the Radio Amateur service. Amateur Radio Societies overseas are already meeting to with study groups and task groups preparing their strategies and requirements to be placed in front of their respective government authorities. Of course the exclusion of Morse Code is very prominent on most agenda. I see in April "QST" that the ARRL have concern on the retention of the 300 kHz in the 40 metre band and offer support that this be established for all IARU Regions. Our 70 cm band is again under the spotlight with the earth exploration satellite service seeking frequencies around 435 MHz. Our strength is in our own Society.

Migrating Birds

In the ARRL News Letter recently there was a request for volunteers to monitor and track tagged Canadian burrowing owls. It appears they migrate from Canada to as far south as Texas and Mexico. The tag frequency is 172 MHz. So if by chance you hear a strange warble on this frequency, contact K0OV. The mind boggles at the thought of tagging a few Galahs with a 145 MHz transmitter and letting them loose at the next DF Field Day!

NZART 75th Jubilee Conference – Auckland – 1st to 3rd June 2001

75th Jubilee Conference time is getting close.

The venue is the top class Alexandra Park Function Centre adjacent to Auckland's historic Cornwall Park and One Tree Hill. Easy to reach, plenty of parking and central to just about everywhere in Auckland.

Lester Earnshaw KB7FA, Author and President of Kachina Communications will be a keynote speaker at the Conference. A pioneer of the early development of SSB/HF communications in NZ now lives in the USA.

Forums and section AGM's will cover many aspects of amateur radio and related topics- AMSAT, SPAM, OTC, WARO, AREC, Digital Modes & Frequency Standards, Satellite working, VHF Contests, ATV, ARPS & GPS, CD & LandSAR. Trade and information displays will be accessible for the general public.

Alternative programs have been planned to take in a variety of Auckland attractions, and the Waiheke Wine Trail should provide a memorable outing for those participating.

Dinner on Saturday and Sunday will be held in the Top of the Park restaurant, with Saturday night guest speaker Phillip Sherry, and another evening of entertainment and fun on Sunday night.

There will be $10 discount for full weekend registrations received before 19th May.

Remember, registration for this NZART's 75th Jubilee Conference is not restricted to NZART members or Amateurs, so encourage anyone interested to come along and join in the action.

If you plan to travel the Tasman to attend this great event you can obtain registration forms and information from the NZART website http://www.nzart.org.nz/nzart, or write to 2001 Conference Committee, C/- P.O. Box 10-138, Dominion Road, Auckland. 1030.

Contests

Contest Calendar May – July 2001

May	5	VK/Trans-Tasman 80m Contest	(CW/SSB)	(Apr 01)
May	5/6	Ten-Ten Intl. Spring QSO Party	(CW/RTTY)	
May	5/6	ARI Intl. DX Contest	(CW/SSB/RTTY)	
May	12/13	VOLTA WW RTTY Contest		
May	12/13	CQ-M Intl. DX Contest	(CW/SSB/SSTV)	
May	26/27	Anatolian RTTY WW Contest		
May	26/27	CQ WW WPX Contest	(CW)	(Feb 01)
June	9	QRP Day	(CW)	(May 01)
June	9	Portugal Day Contest	(SSB)	
June	9	Asia-Pacific Sprint	(SSB)	(May 01)
June	9/10	WW South American CW Contest		
June	9/10	ANARTS WW RTTY Contest		
June	16/17	VK Novice Contest	(May 01)	
June	16/17	All Asian DX Contest	(CW)	
June	23/24	Marconi Memorial Contest	(CW)	
June	23/24	ARRL Field Day	(All Modes)	
July	1	RAC Canada Day Contest	(CW/SSB)	
July	7/8	Internet 6m Contest	(CW/SSB)	
July	14/15	IARU HF World Championship	(CW/SSB)	
July	21	Pacific 160 metres Contest	(CW/SSB)	(May 01)
July	21/22	SEANET Contest	(CW)	
July	28/29	Russian RTTY WW Contest	(RTTY)	
July	28/29	IOTA Contest	(CW/SSB)	

Again your support is requested for our VK contests – there will be several in the next few months e.g the CW Operators' QRP Club QRP Day in June, Novice Contest in June and Pacific 160 metres in July.

Results of CQ WW WPX SSB Contest 2000

(VKs only Call\band\score)

VK5GN	All	7,799,293
VK3TZ	All	4,554,869
VK4UC	All	4,257,870
VK8HZ	All	1,028,146
VK8AV	*	147,620
VK1MOJ	28	143,788
VK2CA	All	1.060,409

QRP DAY CONTEST 2001

0700z -1200z Sat 9 June

Open to all CW operators, the **object** is to work as many stations as possible.

Category: Single Operator only.

Sections: (i) VK, ZL, P29 (ii) outside the above call areas.

Mode: CW only.

Bands: all HF bands (no WARC).

Exchange: RST plus serial number beginning at 001 and incrementing by one for each contact.

Repeat contacts on same band: In order to make greater use of available band space and time, repeat contacts with the same station will be allowed with a minimum of two (2) hours between contacts.

Scoring: the object is to score as many points as possible in your section.

Stations within VK/ZL/P29 score as follows —

VK/ZL/P29 contacts 1 point

Outside VK/ZL/P29 3 points

Stations outside VK/ZL/P29 score as follows —

VK/ZL/P29 contacts 3 points

Outside VK/ZL/P29 1 point

All contacts made with homebrew transmitter or transceiver score double points.

Final Score is the sum of the total QSO points. Except for the use of homebrew equipment (see above), no multipliers apply.

Certificates: Certificates will be awarded to the following –

(i) first three placegetters in each section,

(ii) top scorer on each band (if the entrant is not already a placegetter).

General: any station claiming to operate QRP MUST NOT exceed a maximum of five watts carrier to the antenna and should add /QRP after its callsign. Logs showing contacts and points claimed, together with a full description of equipment used, should be sent to —

Ron Everingham VK4EV,
30 Hunter Street, Everton Park, Queensland, 4053,
no later than 6 July, 2001.

PACIFIC 160 METRES CONTEST 2001

Date: *Saturday, 21 July, 2001*

Time: *0700 - 2300 UTC*

Object: for P2, ZL and VK stations to make as many contacts as possible on 160 metres.

DX stations are encouraged to participate, but may only work P2, ZL or VK.

Categories: Single Operator; Multi-operator; SWL

Sections: CW only; SSB only; MIXED

Frequencies: CW: 1828 - 1840 kHz
SSB: 1843 - 1875 kHz

(Note: Guard band 1840 - 1843 kHz. Contacts not permitted)

Exchange: RS(T) plus serial number beginning at 001.

Score:

For P2, ZL, VK –
One point for QSO with own call area;
two points for other call areas in ZL or VK;
three points for Pacific Islands (ZK1, VK9)

For Pacific Islands –
one point for QSO with own call area;
three points for P2, ZL, VK;
five points for QSOs outside P2, ZL, VK.

For stations outside P2, ZL, VK or Pacific Islands –
five points per QSO.

Multiplier:

For P2, ZL, VK –
total number of VK, ZL and P2 call areas worked, plus OTHER DXCC countries.

For stations outside P2, ZL, VK –
total number of P2, ZL and VK call areas worked.

Final Score: Total QSO points times total multipliers.

Certificates: to top scorers in each mode, call area of ZL and VK and in each DXCC country.

Logs: Please show full QSO details of call worked; mode; time UTC; exchange.

Include Summary Sheet showing operator's callsign; name; mailing address;category and section entered; points claimed and a signed Declaration.

Logs submitted electronically need only show operator's name in lieu of signature, but must show all other information.

Send Logs:

1. By mail to –

Ian Godsil VK3VP,
57 Nepean Highway,
Aspendale, 3195,
AUSTRALIA

2. By e-mail in ASCII/Cabrillo format to: contests@radiomag.com by 17 August, 2001

Asia-Pacific Sprint

SSB: Sat 9 June 1100z–1300z

CW: Sat 20 Oct 1100z-1300z

Object: For stations outside Asia-Pacific region to work as many AP stations as possible in the two-hours limit. **Bands:** 20m and 40m only.

Power: max 150W

Category: Single operator, single radio only.

Exchange: RS/RST plus serial number starting at 001. Stations may be worked only once per band.

Multipliers: prefixes as per WPX rules (once only, not once per band).

QSY Rule: Calling station must QSY after a QSO at least one kHz on CW and six kHz on SSB.

Final Score: total of QSOs by multipliers.

Logs must contain complete QSO information plus Summary Sheet indicating claimed score, CQ Zone and T-shirt size.

Send logs by mail to: James Brooks, 26 Jalan Asas, Singapore 678787 three days after contest. Logs may be sent by

e-mail in ASCII format to: jamesb@pacific.net.sg

NOVICE CONTEST 2001

from Bob Hockey VK2FI, Contest Manager

Sat 16 June - Sun 17 June

0800z - 0800z

Object is to encourage amateur operation in VK, ZL and P2 and to promote contacts with Novice and Club stations. Only VK, ZL and P2 stations are eligible to compete and stations in the same call area may contact each other for contest credit.

Bands: Novice frequencies in the 10, 15 and 80 metre bands. No cross-band operation permitted.

Categories: Single Operator, Club stations and SWL stations.

Modes: SSB and CW.

Call "CQ N" on CW, "CQ Novice Contest" on SSB and if you are involved with a club station then call "CQ Novice Contest Club Station" followed by your callsign.

Exchange RS(T) and serial number commencing with 001 and incrementing by one for each subsequent contact. SWLs may log up to 10 sequential contacts made by a station and then log at least five other stations before logging the previous station again. The five stations so logged need be a minimum of one contact only.

Score: two points for contact with Full Call/Intermediate stations; five points for contact with Novice stations and 10 points for Club stations. On CW score DOUBLE points.

SWLs score two points for Novice to Full/Intermediate, and Full to Full; five points for Novice to Novice and 10 points for Club stations.

Note RULE CHANGE: Intermediate stations (J and K calls) now classed as Full Calls.

Logs headed "VK Novice Contest 2001" must show date, time in UTC, band, mode, station contacted, exchanges and total claimed score at the bottom of each page.

A **summary sheet** should show callsign, name, mailing address, category, section, number of valid contacts, claimed score, signed declaration showing signature of operator or responsible club officer for club stations.

Entrants may only submit one log per mode. Logs for entries where the operator uses more than one callsign whilst operating in the contest will not be accepted.

Mail logs to: Novice Contest Manager, Westlakes Amateur Radio Club Ltd., P.O. Box 3001,

Teralba, NSW, 2284, by 16 July , 2001. Logs may also be e-mailed to: <*westlakes@hunterlink.net.au*>

Awards include the Clive Burns Memorial Trophy for the Novice with the highest CW score and the Keith Howard Trophy for the Novice with the highest SSB score. These trophies are held at the Wireless Institute of Australia Federal Office, with a plaque being sent to both winners.

Certificates will be awarded to the highest-scoring Novice in each call area and the highest-scoring station in each section. Certificates are at the discretion of the Contest Manager.

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION INC.

A.L.A.R.A. CONTEST August 25—26, 2001

Eligibility: All licensed operators throughout the world are invited to participate. Also open to SWLs.

Object: Participation: YL works everyone, OMs & Clubs work YLs only.

One contest (combined phone and CW) run over 30 hours.

Starts: Saturday 25th August 2001 at 0600 hours UTC

Ends: Sunday 26th August 2001 at 11 59 hours UTC

Suggested Frequencies: Bands to be used are 3.5, 7, 14, 21, and 28 MHz only. The following are suggested frequencies for easier location of contacts: 28.380 to 28.410, 21.170 to 21.200 and 21.380 to 21.410, 14.250 to 14.280, 7.070 to 7. 100, 3.560 to 3.590

Operation:

- Every individual phone or CW contact may be counted.
- There must be an interval of greater than 1 hour between contacts with any one station on any one band and in the same mode.
- No net or list operations
- No crossmode operations.
- No crossband operations.
- All contacts must be made in accordance with operator and station licence regulations.

Procedure: Phone: call "CQ ALARA CONTEST"

CW: YLs call "CQ TEST ALARA" OMs call "CQ YL"

Exchanges: ALARA member: RS or RST, serial no. starting at 001, ALARA member, name.

YL non-member, OM or Club: RS or RST, serial no, starting at 001, name, and whether club station.

OMs, Clubs & SWLs work YLs only.

Scoring: Phone: 5 points for ALARA member contacted, 4 points for YL non-member contacted, 3 points for OM or Club station contacted

CW: Contacts where at least I operator is Novice class count double points, otherwise same as phone.

OM, SWL & CLUB: 5 points for ALARA member logged, 4 points for YL non-member logged

Logs: Single log entry (but Australian YLs entering for the Florence McKenzie CW trophy should indicate their CW score separately). Logs must show date/time UTC, band, mode, callsign worked, report & serial no. sent, report & serial no. received, name of operator of station worked, whether it is a Club station, and points claimed.

Sample Log:

Date UTC	Time UTC	Band MHz	Mode	Callsign	RS(T) & Serial No. Sent	RS(T) & Serial No Rcd	Name	Points
12/11	0135	28	SSB	VK6DE	59001	58028	Bev	5
	0141	21	CW	VK3KS	599002	599045	Mavis	5
	0600	14	SSB	FK8FA	59025	59011	Aimee	5
	1100	3.5	CW	VK2PXS	599129	599004	Bobbie	10
	1103	3.5	SSB	VK3BSP	59130	59006	Joe (Club)	3

Logs must be signed. Logs also to show full name, callsign and address of operator, and show final score (points claimed). Logs must be legible. No carbon copies. No logs will be returned.

Decision of the Contest Manager will be final, and no correspondence will be entered into.

Logs must be received by the Contest Manager by: 31st October 2001.

Contest Manager: Mrs. Marilyn Syme VK3DMS
99 Magnolia Ave.
Mildura. 3500
Vic. Australia

Florence Mckenzie CW Trophy: This will be awarded to the Australian YL operator with the highest CW score (not necessarily an ALARA member). Minimum score 50 points. The actual trophy, because of the size and weight, will not be forwarded to the winner, but a certificate bearing a photo depicting the trophy will be sent to the winner each year.

CERTIFICATES will be awarded for the following:

Top score overall
Top score phone only
Top score Australian YL CW (Florence McKenzie cert.)
Top score ALARA member in each country and VK call area
Top score YL non-member in each continent
Top score OM in each continent
Top score SWL in each continent
Top score VK novice
Top score overseas YL CW
Top score VK Club station

TROPHIES will be awarded to the following:

Top scoring Australian YL
Top scoring DX YL

CLUB STATIONS: Operators of Club stations may use the Club call only for contacts, and MUST identify each contact as with a Club station. Use of personal consigns while operating as a Club member is not permitted.

DX Notes

Ross Christie, VK3WAC
19 Browns Road, Montrose 3765, Vic.
Email Vk3wac@aol.com

Pardon me, after *you*, sir...

These past few years have seen many articles in the amateur press lamenting our bad behavior on the bands. It seems that the general opinion is that we are becoming a selfish and self-centred lot. However, two recent events on the bands makes me feel there is still hope for us yet. The first instance concerns a CW dogpile calling EA6NB (Belearic Islands) on 12m. The usual cacophony of stations calling made it difficult for him to hear a weak JA QRP station calling. When the EA6 called 'QRZ the QRP station' everyone stopped sending while the QRP station had his turn. Of course, immediately after he had finished it was on for young and old again and, of course, I threw in my lot along with them. The second instance concerned a couple of 'gentlemen' who tuned up on the same frequency and then began to call CQ simultaneously. One of the stations was a VK2 and the other a JA. When they discovered that they were doubling they gave each other a call and apologised to each other for not listening before transmitting. Now I have heard some shocking exchanges on the air regarding who was on frequency first, but I was amused and heartened at the courtesy of both stations when they realised what had happened. What made it even funnier was that BOTH stations QSY'd and began calling CQ again on different frequencies.

I managed to get some of the major jobs around the house out of the way and found some time to spend on the air. I managed to work JW/DL3NRV on 17m CW. There was a lot of flutter on the signal coming over the pole and it made copy extremely difficult. I have heard this operator on the air in the past but have never been able to penetrate the pileups. This time I managed to get through on my fifth call.

The magnetic field of the sun began to invert during the month of February, this is a clear indication that the peak of the current cycle has been reached and that we are now on the downslide. There will still be a few years of good propagation to come on the upper HF bands, however, I wonder how much more activity there would be if people actually called CQ instead of just giving the bands a cursory listen.

While we are talking about the sun Carl, N4AA has sent me some info regarding the largest sunspot seen in ten years. The area of the spot measured 13 times that of entire surface area of the Earth. I tried to see it using the old trick of projecting an image of the sun onto a sheet of white paper using a pair of binoculars. I thought I could see it, but it is difficult to say as I could not hold the paper and binoculars steady enough. There was a massive eruption on the sun near to this spot on Wednesday the 28th of March that caused a massive CME (coronal mass ejection). The CME was expected to hit Earth on Friday the 30th March. This resulted in spectacular auroral displays at both the North and South poles. In fact the Aurora Australis was clearly visible from the Mornington Peninsula, southeast of Melbourne. The following weekend had excellent propagation and most bands were very lively. I wonder how the 6m guys went with the Aurora?

The DX

3A, MONACO. A group of Italian operators will be active from Monaco for 3 days from the 1st until the 3rd of June. Operation will be mainly on 6m but they will also be on the HF bands. Those of you who are keen enough can E-mail for a sked to 3a@mannelli.com QSL is direct with a SASE to Fabrizio Vannini (IK5GQK), via Forlanini 68, 50127 Firenze, ITALY. [TNX IK5GQK and OPDX]

3V8, TUNISIA. Zaida, a YL operator, has been active with the callsign 3V8BB. You can usually find her on 20m around 14260kHz between mid morning till early afternoon GMT. [TNX OPDX]

4S, SRI LANKA. Nelson, 4S7NE, has been active on 30 and 17 metres operating CW. He is usually active after 1830 GMT around 10103kHz. [TNX 4S7NE and OPDX]

7Z, SAUDI ARABIA. Joe, W5FJG, is hoping to get on the air from Jeddah as 7Z1AC by mid April. He especially likes 20m but expects to get on the 17, 15, 12 and 10m bands soon. 30, 40 and 80 will come later. He operates both CW and SSB. Joe works as a technician for the American Consulate and will be there for the next two years. Joe also mentions that the American Embassy in Riyadh has been given permission to restart amateur radio operations using the callsign 7Z1AB. QSL via WA4JTK [TNX W5FJG and OPDX]

9G, GHANA. Derek, 9G5MD, has been very active on the 15 and 10m bands. The most likely time to catch him is between 1200-1800z around 28500 and 21250kHz. QSL via F5VCR. [TNX 9G5MD and OPDX]

9N, NEPAL. Lawrence, 9N7RB, lives in Katmandu. He can often be heard on 10m SSB after 1330 GMT. [TNX 9N7RB and OPDX]

EV21, BELARUS (Arctic Expedition, "POLAR RING"). There is currently an expedition going on in the Arctic and is being helped by the members of the "Activity Group of Belarus" (AGB). The expedition/operation started February 1st in Minsk and will travel the southern part of the Arctic and the Polar Area. The expedition will pass through Yama (R9K/), Taimyr (R0B), Yakutia (R0Q) and Chukot (R0K). Currently, R0B/EV21ABG is now on from Taimyr. There is an award available for working this station. [TNX OPDX]

JW, SVALBARD. Per, LA3FL, is active during his spare time from Hopen Island (EU-063) signing JW3FL. He is the only radio operator on this little island with many polar bears (radio ham will taste almost the same as ordinary ham to a polar bear, hi). He will be there until June

2001. Per has been logged on CW on 21025kHz at 0915z and on 1833kHz between 0045 and 0330 GMT. QSL via LA3FL. [TNX LA3FL and OPDX]

JW, Prins Karls Forland. Terje, LA3OHA/JW3OHA and a group of others are in the advanced stages of planning an operation from Prins Karls Forland (EU-063). They are planning to be on the air between the 31st of May and the 10th of June 2001. [TNX LA3OHA and 425 DX News]

S92TX will be active from Sao Tome-Principe. Tom is mainly active on 10m, 15m and 20m SSB but has high hopes of being on 6m soon. Tom is employed by the Voice of America and is on assignment here for the next two years. QSL to W7KNT. [TNX W7KNT and The Daily DX]

VO2, Labrador, Canada. Fred, K2FRD is planning a DXpedition to Labrador. This is not a DXCC entity but it is a rather rare location. He plans to operate from about the 6th of June until the 31st of August as VO2/K2FRD. Fred's accommodation will be a tent (I hope he has a lot of fly wire and repellant, the flies in this area are ferocious). His QTH will be approx. 90km west-southwest of Churchill Falls, Labrador, Province of Newfoundland, Canada. Activity will be mainly on 10, 15 and 20 metres. Suggested frequencies are 28415, 28515, 21315, 21415, 14215 and 14295 kHz. Plans are also in hand to participate in some DX nets. [TNX K2FRD and OPDX]

ZA, Albania. Loreto, IK7VJP is currently in Albania and expects to remain there for two months. He hopes to operate as ZA1/IK7VJP from Durres (Durazzo). QSL via home call either direct or via the bureau. [TNX IK7VJP and 425 DX News]

DXpeditions

Several Scots operators will be operating from the Falkland Islands (SA-002) from 23rd of April until the 8th of May. Rob, GM3YTS; Jack, GM4COX; Tom, GM4FDM and Gavin, GM0GAVplan to have two stations on the air with a focus on CW, LF and the WARC bands. QSL to GM4FDM. For more information, go to www.hfdx.co.uk/vp8sdx. [TNX GM4FDM and The Daily DX]

The 3B6RF DXpedition to Agalega is now confirmed for the 5th until the 16th of May. A multi-national team of 19 operators from Switzerland, Portugal, Germany, France, England, USA, Poland, Mauritius and Israel will be on the air with 6 HF stations including linear amplifiers and a wide range of antennas (26 at last count). Activity will take place on all bands and modes including satellite, 6 metres, PSK 31 and SSTV (this mode will only run three days). More details can be found at the official web site at http://www.Agalega2000.ch. QSL via HB9AGH either direct via Ambrosi Fleutsch, Lerchenweg 29, CH 8046 Zurich, Switzerland or through the bureau. [TNX HB9BXE and OPDX]

Two members of the Bavarian Contest Club (BCC) will be touring the South Pacific and will be travelling through the Cook Islands between the 28th April until the 18th of May. Uwe, DL9NDS and Klaus, DL7NFK will be active from the North and South Cooks as ZK1NDS and ZK1NFK. The pair will operate from the islands of Rarotonga (OC-013), Mangaja (OC-159) and Aitutaki (OC-083) in the Southern Islands and from Manihiki Atoll in the Northern group. They will have an extensive range of equipment with them, e.g. two 400-watt amplifiers, a 1 kW amplifier, LP5, V80E vertical and some wire type antennas. They plan to spend a lot of time using the digital modes RTTY, PSK31 and MFSK16 (this is a new one to me?). QSL via their homecalls. [TNX DL9NDS and The Daily DX]

Several Brazilian operators have announced plans for an October expedition to Trindade Island. They will have two stations on for two or three days using the calls ZW0TB on phone and ZW0TW on CW. Planning for the DXpedition began in January so things will be well under way by now. The lead sponsors position has been taken up by Icom. The group has also gained the support of the Brazilian Navy (they have a base on Trinidade Island) and Anatel (the Brazilian Telecommunications Agency). The official web site is www.radiohaus.com.br/trindade.htm. The operators will be Fran, PU2RYW, Claudio, PY2NW and Erwin, PY2QI with Ben, PY2KQ handling QSL chores and other support. [TNX 425 DX News]

Special Events

A series of special event stations will be on the air to celebrate the 50th anniversary of V.R.Z.A. (the Dutch Amateur Radio Society). Wim Visch, PA3BIZ, Vice President of the VRZA, has released details of an award associated with this event. To qualify for the award contact with at least four of the following stations must be established PI50VRZ/A, PI50CQP/A, PI50V, PI50R, PI50Z and PI50A. These stations will be on the air until the end of 2001. The callsigns PI50V, PI50R, PI50Z and PI50A will be assigned to 4 of the 18 club stations participating in this event on a weekly basis, shifting the next week to four other club stations, thus the callsigns will be kept active the whole year round. QSL's will need to be sent via the regular club stations callsign i.e. PI4(club call) so please ask for the official club callsign. The stations will be on all bands, all modes and also during contests etc. Evidence of the four stations worked/heard can be presented in a log file and signed by two other amateurs and accompanied by 5 USD or equivalent will be sufficient to apply for the award. Send details to the award manager, Ben Horsthuis, PA0HOR, Fr. Halsstraat 95, 3781 EV Voorthuizen, The Netherlands." [TNX OPDX]

Mike, GM4SUC sent a note saying that planning for this year's International Lighthouse/Lightship Weekend is coming along very well. The weekend of the 18th and 19th of August should be pencilled into everyone's diary. Last year the event was a great success and this year should be even better. A list of stations that have confirmed their participation can be found at www.vk2ce.com/illw/index.html and rules and further information on the event can also be found on this site. If I can organise time away from work that weekend I intend to be on the air from near Cape Shank Lighthouse, on Bass Strait.

The Finnish Army Signals School is celebrating its 60th anniversary this year. Special event station OI3AY was on the air during the CQ WPX Contest. Martti Laine, OH2BH, was one of the operators from the OI3AY station during the contest. If you were lucky enough to work this one you will be receiving a special QSL card to mark this special event. The QSL Manager is Teuvo Kaistila, OH1BV, Ahventie 5B1, 25410 Suomusjarvi, Finland. [TNX OH1BV and OPDX]

Special event station TM0AR will be active during the "International Festival of Art and Technologies" from the 15th until the 27th of May. Activity will be on 40, 20, 15 and 10 metres (including the

WARC bands). Reference DDFM - 72. QSL via F5TJC: Jean-Louis Briere-Lecomte, 18 Le Petit Saint Louis, 72400 Cormes, France. [TNX F5TJC and OPDX]

IPARC S5. The Slovenian branch of the International Police Association Radio Club (IPARC) is sponsoring an award to celebrate its 5th anniversary and the 10th anniversary of IPA-Slovenia. The award will be issued for contacts made (or heard for SWLs) with S51IPA, S52IPA, S53IPA, S59IPA and S50IPA between the 15th and 22nd of April 2001. For further information please e-mail iparc@hamradio.si [TNX S51FV and 425 DX News]

Round up

I received a note from Gwen, VK3DYL, with some details of a group of Scandinavian YL's who will be operating from Aland Island from the 30th of June until the 6th of July. Among the group will be three YL's who made the trip to Norfolk Island last year. The group will be on the air using the contest station of Martii, OH2BH. The callsign will be OH0YLS (Young Ladies Society). A list of names/callsigns and the QSL route will be published in next months AR. If you hear them on the air please give them a call. These YL's seem to do a fair bit of globe-trotting and manage to get some good operating time in as well, is there something we OM's are missing?

Jean, ON6TJ, says that as of the 12th of Feb 2001 Belgian amateurs can now run up to 150 watts (previously only 10 watts) on the 160 metre band. Limits of operation have also been expanded to 1810 – 1850kHz (1810 – 1830kHz is still shared with other services). The CW requirements have also been lowered to 5wpm. [TNX ON6TJ and QRZ DX]

The National Institute of Standards and Technology (NIST) are carrying out a survey to get a better understanding of who is using their services and for what purposes. NIST has compiled a questionnaire for users/listeners of WWV, WWVB and WWVH to fill out. The intent is to get a better idea of what services are being used by whom and for what purpose. If you wish to participate please send an E-mail requesting the questionnaire to radio@boulder.nist.gov Responses will be greatly appreciated. More information about NIST services can be found on their web site at http://www.boulder.nist.gov/timefreq [TNX The Daily DX].

Sources

There are quite a number of people we need to thank for the information that make up this months DX Notes, so our thanks go to IK5GQK, 4S7NE, W5FJG, VK3DYL, 9G5MD, 9N7RB, LA3FL, OH1BV, LA3OHA, W7KNT, K2FRD, IK7VJP, GM4FDM, HB9BXE, N4AA, DL9NDS, PU2RYW, PY2NW, PY2QI, PY2KQ, PA3BIZ, GM4SUC, F5TJC, S51FV, ON6TJ, QRZ DX, 425 DX News, The Daily DX, OPDX.

WICEN NORTHERN RIVERS

Emergency Radio Operator Training

On Saturday, 24 March, WICEN conducted another in the series of Radio Operator Training Courses. WICEN is an organisation of Amateur Radio operators who provide communications in times of emergencies.

The courses are to train emergency services Radio Operators in operating procedures, message and traffic handling. 13 WICEN and 6 SES operators attended this very intensive course. Instruction, testing and practice was given in operating procedures and the requirements for setting up Field Stations.

After lunch a written test was given on the morning subjects and then five Field Stations were set up. Different equipment set ups were examined by all and adapted. These used HF and VHF frequencies to practice message passing and procedures. Contacts were made with Victorian, South Aust. and West Aust. operators who happened to be on air. Those knowing how, practised traffic using Morse Code as well.

This is part of a series of courses, the next one being on the 2nd June.

Photo 1 (top): FieldStn1—SES and WICEN personnel operating from a Field Station.

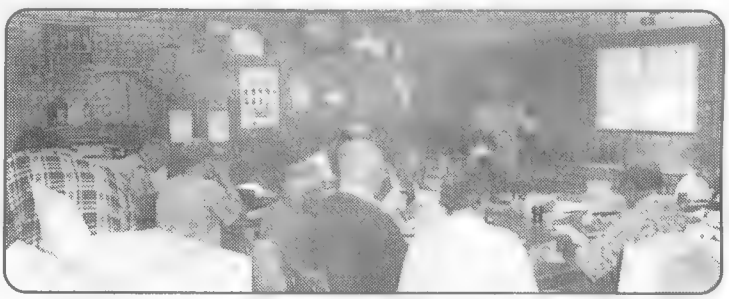


Photo 2: Operators receiving instruction on Procedures and Message Handling.

Ionospheric Update

by Evan Jarman VK3ANI
34 Alandale Court Blackburn Vic 3130

Solar Activity

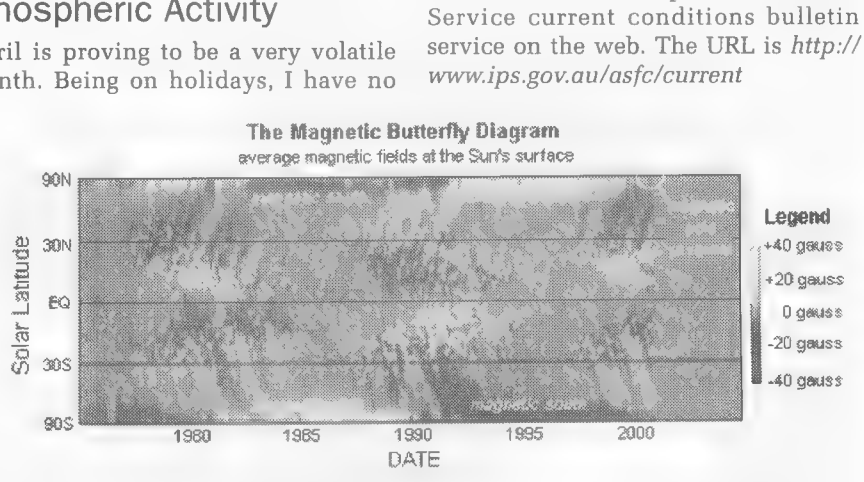
The first signs of a peak in solar cycle 23 have emerged. The sun's magnetic field has reversed. Last year the internal field was pointing to the solar North Pole; now it is emerging from the South Pole.

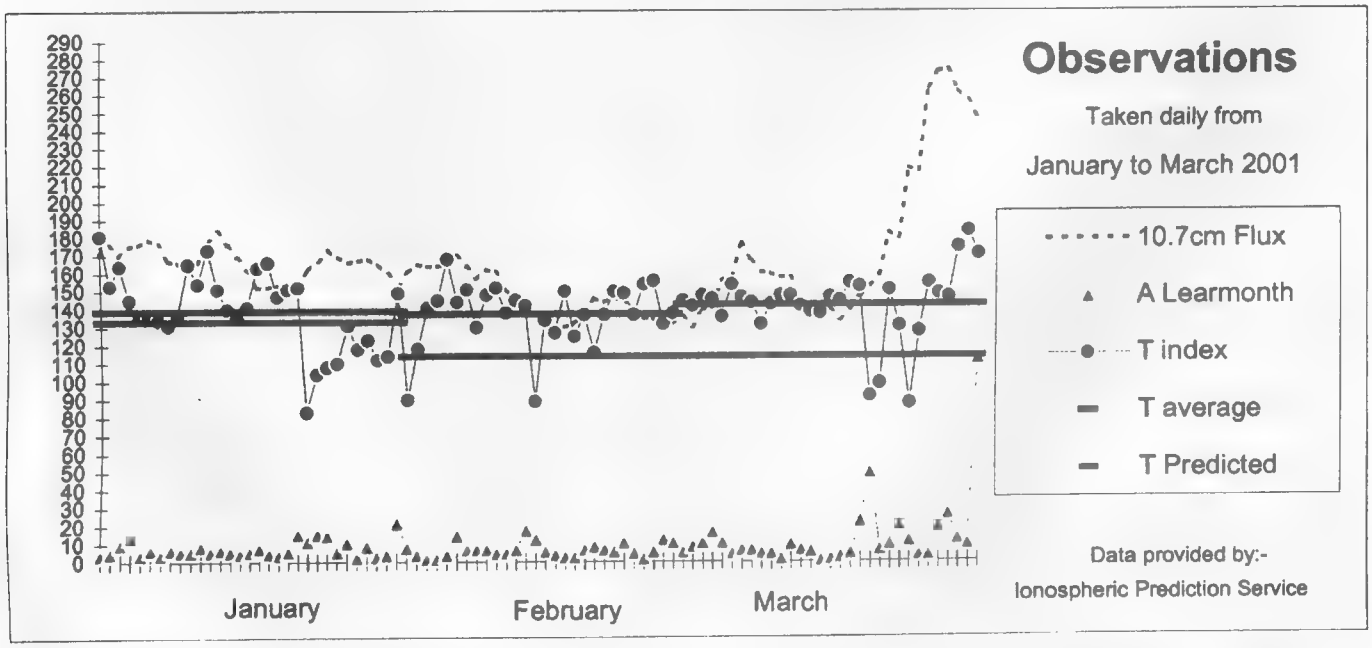
The reversal of magnetic flow is a reliable indictor that the sunspot cycle is at its maximum or has just passed it. Sunspots are an outward indicator of the magnetic flows within. It is worth remembering that the sunspot itself does not effect ionospheric propagation. The tie between the two is that the cause of sunspots also has an impact on the ionosphere. It has long been convenient to equate the two because sunspots have been quantifiable.

Plotting the strength of magnetic field on the sun in a diagram that compared latitude and time has long been another method of ionospheric research: it is called a butterfly diagram. The most recent butterfly diagram using data from the US National Solar Observatory at Kitt Peak is included as an example. The latest reversal is highlighted. The butterfly pattern [hence he name] is caused by sunspots. The diagram shows how at the onset of a new solar cycle: the sunspots are at high latitude. The drift toward the solar equator as the sunspot cycle proceeds can be easily seen.

Ionospheric Activity

April is proving to be a very volatile month. Being on holidays, I have no current experience. I do note that the Ionospheric Prediction Service have reported some very large flares and consequent short wave fadeouts in early April. While conditions are so volatile, both up and down, I can only recommend the Ionospheric Prediction Service current conditions bulletin service on the web. The URL is *http://www.ips.gov.au/asfc/current*





Spotlight on SWLing

By Robin L. Harwood VK7RH

Massive solar flare

There was a massive solar flare at the end of March continuing into the first week of April. In fact it was one of the most severe, I have ever experienced and made it difficult to ascertain all the changes to the new A-01 period. On one day, there was almost a complete absence of propagation at 2100z, although signals gradually faded in as the Sun rose higher in the sky. I believe that observers in the Northern Hemisphere were treated to a spectacular auroral display.

Other broadcasters cut broadcasts to Australasia.

In last month's column, I reported that Swiss Radio International had ceased beaming to Australia and the Pacific, as well as the East Coast of North America.

Now I have discovered that the Vatican Radio also ceased broadcasting to this region although their English programming to Africa come in well. At present, there is a dispute between the Holy See and the Italian government over electronic pollution affecting residents adjacent to the Maria Galeria site. The matter has ended up in the legal system with both sides locked in a war of words debating jurisdiction. The last I heard was that tests were to be undertaken to determine if it really was a problem.

The Italian Minister of the Environment threatened to cut of their electricity feed if the Vatican did not cut down their emissions by a certain date, which also happened to be the day prior to the Italian General Election.

The Austrian Radio (ORF) also discontinued broadcasting to Australasia and all their broadcasts have been severely curtailed due to budgetary constraints and they have now opened up the senders to other broadcasters and program makers. I believe that Radio Flanders International in Brussels (yes they have renamed their station again) has also ceased broadcasting to this region.

Darwin back up

The Darwin facility is operational but is still rather irregular. Their crackly audio feed leaves a lot to be desired. From what I have read on the Net, it is presently identifying as the African Service of Christian Voice to Asia. I have heard it at 0120 on 21680. I have not heard it on any other channels.

Meanwhile Radio Australia was recently thrown into a tailspin when the 7 Network rapidly pulled the plug on Australian Television International because they considered it not viable commercially. RA formerly used to piggyback their audio on the ATI signal and they had to scramble to find alternative feeds to their partner and relay stations in Asia and the Pacific. The Federal Government gave them additional funds to use a trans-ponder on the Indonesian Palapa bird.

However RA's frequency management is a shambles. For example, they are scheduled to be on 15240 using the Shepperton sender at 0800 and at the same time using the Taiwan relay on the channel, being half a second behind. Listeners in SE Asia have told me that the channel is a mess.

Clandestine watch

I have not heard the anti-Iranian clandestine stations after the new broadcasting period commenced. They are probably on lower channels at much earlier times. However I have come across another group using similar cat and mouse tactics. It is the Falun Gong movement that was banned in China. Ostensibly a meditation group similar to Tai Chi, the movement evidently expanded its scope. I first heard the station on 12120 kHz around 2130 and the station suddenly went of mid-word, reappearing just 5 kHz down. There were frequent mentions of Falun Gong and I did tentatively identify it as "Falun dafu diantai".

Since then, I have discovered that there are three transmitters used on adjacent channels in parallel. Broadcasts are in Chinese with the same music theme played in the background. You will hear these stations, which reputedly are located in Bulgaria, anywhere between 121110 and 12135 kHz. The Chinese have mounted a jamming operation primarily using white noise or overmodulated audio. Transmissions on any given channel can last from 10 to 20 minutes, depending on the severity of the jamming. I have heard them between 2200 and 2300 UTC.

One clandestine that does not make it to here is located in the American State of Kentucky. It originally identified itself as the "Kentucky State Militia Radio" and has been heard on 3260 on USB. This station is extremely hostile to the Federal Government, reflecting the views of an extreme right-wing group of state supremacists. It was apparently put together by a "Major Steve" who surrendered his ham ticket after numerous complaints over a 75 metre SSB net which strayed far from the radio regulations.

These groups apparently hired airtime over a legal station in Georgia, which broadcasts on USB under the callsign WGTG, although they have since changed the call letters. Some of them were kicked off when they refused to pay for their broadcasts and this clandestine popped up adjacent to the legal station not long after. "Major" Steve has since left the Kentucky State Militia, renaming the clandestine as "United Patriot Radio". One of the channels he claims to operate on is 12182 in the daytime but I have not cited any reports yet. I have heard WGTG carrying the Genesis Communications Network at 2100 on 12172 on reduced carrier sideband (r3e). This self-styled "major" has stated on-air that he does not recognise the US Government and its radio regulations and ominously warns that his station is backed by the 'Second Amendment". And what is that? The right to bear arms. Waco apparently is prominent in his monologues.

In conclusion, I would like to acknowledge Glenn Hauser's DX Listening Digest and Martin Scoech's Clandestine Radio Watch for background to this month's column.

Who said short wave was dead?

Repeater Link

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Tesla Feedback

Anyone who writes articles enjoys receiving feedback from readers, particularly if it is complementary. It is interesting to note that the most feedback for this column is usually when a non amateur radio article is written, such as my article about Tesla Coils. Several amateurs have written or E-mailed me about Tesla Coils.

Reproduced below is a letter from Athol VK7LR, remembering his early experiences with building a Tesla Coil way back in the early 1930s. The letter captured the spirit of making do with what you had, and the excitement and wonderment of a time when off the shelf did not extend to electronics. Over to Athol.

"Your article in Amateur Radio for March 2001 brought back memories of similar activities in the mid 1930'2, probably in 1932 or 33 as it was before I was licensed VK7LR in 1934. Together with two like minded youths we constructed a coil, in appearance similar to the photographs of your coil.

"The coil was about 5 feet long, wound with 26 SWG or 24 SWG double cotton covered wire, the complete coil then generously coated with shellac dissolved in metho. (French polish) The ball on top was a copper float ball salvaged from a toilet system about 5" in diameter. The primary coil was similar to yours and made from 1" by about 24 gauge copper strip, donated by the local plumber.

"The capacitor (in those days we called it a condenser and I still do) was a stack of whole plate glass negatives with the emulsion soaked off with hot water, and interleaved with pieces of zinc sheet, about 1/64th thick, obtained from piano cases. I should mention here that some imported pianos were packed in substantial wooden cases after the instruments were encased in zinc and all the joints soldered! Have no idea as to the capacity, but it worked. Sparks up to 15" to 20".

"We were not the most popular lads with local citizens who owned radios, as there was only one local radio station, 7UV Ulverstone, about 10 miles distant, running possibly 200 Watts. Most people used the Melbourne stations, 3LO, 3LR, 3UZ, 3DB or so miles away.

"The transformer was a neon unit, 20kV I think. We worked for an electrician who just happened to be the local Claude Neon agent.

"Sometimes I wonder if the youth of today, mostly much better educated than we were, and for fairly reasonable prices, can satisfy their desires with 'off the shelf' articles, will ever experience that thrill we got when our first home made toy actually worked.

"Thanks for reviving old memories.

"Athol VK7LR.

"P.S. Please excuse the hand writing, 85 years don't improve it."

Thank you Athol for letting us know about a time when bits and pieces came from where ever. Particularly liked the zinc sheeting from the piano crate and the glass negatives. Think of all that history washed away from the glass negatives.

More Photographs

Interesting evening taking some photographs of my Tesla Coil with a 35mm film camera. As I mentioned, digital cameras don't do justice, usually due to the lack of control with shutter speed and iris settings etc. With camera loaded I set up the camera on a small tripod, but quickly found at a distance of just under 2 metres from the Tesla Coil I would draw a half centimetre arc off the camera as I reached for it. Earthing the camera overcame that problem and I took 24 pictures with various shutter speeds and iris settings. All guess work but the results were fairly pleasing and I have put a few of the better ones on my web page. Have a look at. www.members.iinet.net.au/~will2/tesla.html

I have included a black and white picture of a particular discharge that looks like a tornado. If the discharge point is smooth, like a door knob or a light globe, for up to 10 seconds at a time, the discharge forms into a thin stream that twists and turns, just like a thin tornado, before breaking up into a more random pattern. The shutter speed was a twentieth of a second. The picture was scanned from the negative at 2000dpi, cropped and digitally enhanced. The colour version is mainly royal blue with a hint of lighter blue and purple. My web site has the colour version.

VK6RBP HF Beacon

As reported, the International HF Beacon, VK6RBP was erratic in power level, giving the indication it was not sending the correct callsign. Investigation showed the beacon was working as it should, it was the Dick Smith 25 amp power supply that was not. The power supply however appears to work okay into a dummy load. Could be RF feedback into the power supply and this is being looked into. Meanwhile the beacon is back on air with another power supply.

ar

AR VHF/UHF AN EXPANDING WORLD

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All times are in UTC

Aurora Australis on 144 MHz!

The sun erupted late March 2001 resulting in substantial ionospheric disruption in both hemispheres. Other than the effects noticed on HF (black out), the aftermath on 50 MHz (some DX) the best Auroral conditions on 2 metres for a couple of years occurred in Southern Australia.

Trevor VK5NC reports ... "The following is a list of stations worked and heard during the 31st of March, 2001 Aurora. I was notified at approx 0630UTC and got the gear organized to go portable. I decided to go to Cape Northumberland as QF01 grid locator is rather rare and is not very far to the south of Mount Gambier. On the way down to QF01hw I was listening to VK3CY, VK3AEF, VK3EK, while I was driving along on my vertical whip ... I could not get back to any of them. I arrived at my portable QTH and got set up. My station was in the car IC290R small amplifier 25 watt output, antenna was 4element yagi at 4 metres high.

Stations worked as follows from 0718 UTC. VK3EK, VK3PK, VK1VP, VK3FMD, VK3BRZ, VK3BDL, VK3WRE, VK3WN, VK2KU, VK3HY, VK5KK, VK3FIQ, VK5DK, VK3AEF, VK3ZQB, VK3HY on CW, VK5EE, VK3SWD, VK2FLR on CW, VK1VP on CW, VK3KEG, VK3KWA on CW, VK3FIQ on CW. The last station worked at 09:32 UTC. Stations heard were VK5NJ, VK5ZBK, VK3AJN, VK3FC, VK3CY & VK3DUT. It was a very good Aurora but no visual display at my portable QTH. Due south from my portable location 50metres is the sea ... the next stop is Antarctica. The signals all came from the south east." ... 73 Trevor Niven VK5NC

Russell Vk3ZQB reports .. "On the 31st of March, 2001, on 144 MHz Aurora, I worked VK1VP, VK2TP, VK2BXT, VK2KU, VK3EK, VK3FIQ, VK5NC/P5, VK3HY, VK3BDL, VK3SWD, VK3WN, VK5DK & VK3AEF. Signals were constantly 4-9 from 0630 UTC to my last contact at 0825 UTC. Activity continued through to 1030UTC" .. VK3ZQB

Colin VK5DK reports .. "Here is a list of stations worked from this QTH on the 31/3/2001 starting at 0735 UTC and concluding at 1005 UTC via the Aurora Australis. VK2KU 4X9, VK1VP 4X9, VK3FIQ 4X9, VK5NC/P 4X9, VK3HY 4X9, VK3DUT 4X9, VK3FC 4X8, VK3BDL 4X9, VK3WN 4X9, VK5KK 4X9, VK3AEF 4X9, VK3ZQB 4X9, VK3SWD 4X9, VK5ZBK 4X9, VK3AJN 4X9, VK3KEG 4X9, VK3PK 4X8, VK3CY 4X9" ... Colin VK5DK

Ron Cook sheds some light on auroral propagation ... "The aurora seems to have a radio reflection mean height of about 110 km and typically sits at about 20 degrees latitude from the MAGNETIC poles. The South magnetic pole sits close to the Antarctic circle, and from our perspective is to the East of the South geographic pole. It is a long way from the geographic pole. At peak times the auroral curtain moves North providing VHF opening in Southern Australia.

The distance worked is limited by the need for common line of sight to the aurora for both stations. Thus around 1200 km on 2m is usual maximum range. The aurora is a truncated cone in shape with the pointy end aimed at the magnetic pole. In VK3 we seem to be limited to working stations in an arc covering Mt Gambier (and Adelaide?) in the West to (my guess) Lord Howe Island to the East. I don't know of any stations in VK7 or southern VK3 working into VK4 on 2m but it could happen with exceptionally intense and extensive auroras. In the Northern hemisphere ranges up of 2000 km with almost East West beam headings have been frequently reported, but the with Northerly beam headings the range is closer to 1200 km max." ... Ron VK3AFW.

As a comment, auroral propagation can be enhanced by Auroral E propagation. The effect follows typical E layer characteristics and becomes more frequency dependant. I.e. 50 MHz works much better than 144 MHz and 432 MHz is yet to be achieved from our latitudes. From VK5KK's shack at 34 degrees latitude SSB was not the preferred option, CW the only option! Similar reports came from VK2's at similar latitudes. The furtherest heard from VK5KK was VK3KWA on CW and VK3HY working VK2KU (no sign of VK2KU). The northern most and widest signal heard was Jim VK3AEF, a genuine 0x6 on SSB with about 1 kHz shift! No sign of VK6 on 2 metres, from my recollection no record exists of a VK6 to eastern VK on Auroral 2m. For those who want to follow Auroral predictions a bit closer go to the IPS website www.ips.gov.au.

John Martin, VK3KWA writes ... "The other night it occurred to me that it would be interesting to study the Doppler shift and spread on auroral signals. I got VK3BRZ to send a carrier and observed what came back. The straight blue line is his carrier received direct with a pitch of about 980 Hz. Above is it auroral reflection spreading between about 1200 and 1750 Hz, with the greatest density around 1300 Hz.

I heard some other stations, which sounded as though they had far greater shift and spread, but unfortunately I didn't think to fire up the computer in time. I will be lying in wait for the next one" ... VK3KWA

6 Metres

Colin VK5DK reports... "On the 30/3/2001 at 1055 UTC after a phone call from Robbie VK3EK alerting me that he had just worked JY9NX on 50.106MHz I was able to work JY9NX with 5 x 5 reports both ways. Later in the evening from 1308 UTC I worked 15 Japanese stations

and at 1325 UTC I worked VR2XMT also at 5 x 5. The band was still open at 1400 UTC." .. Colin VK5DK

Wally VK4DO reports ... "Good opening on 15 April to USA between 0231 and 0340.Grids, DM02, 03, 06, 07, 12, 13, 14, 33, 42, 43. CM94, 95, 96, and 97 for total 48 stations. Signals up and down from S1+ QSB to S9. Earlier FW5, T12, T14, T15, FO3, VK9NS (new country) and ZL2TPY b/s. On 14 April at 0435 YB0CB1 (OI33)" ... Wally VK4DO

Microwave Primer Part Twelve: Microwave Transverter IF Transceivers

This part was going to be about ATV and Microwaves. The original planned 12 parts to this series has had a few bits added along the way by request so at best guess we will end up with 18 parts! This part will cover IF transceivers. Part 13 will cover Frequencies and IF switching techniques. Part 14 will cover Local oscillator frequency stabilizing methods, a very interesting subject. Plans are also a foot to encapsulate the series in a publication later this year.

In earlier parts, I have discussed various transverters for 1296 to 24048 MHz so now we will talk about what to drive them with. The IF transceiver is an important part of any Microwave system. As often signals are best described as "weak", the difference between a good transceiver and a bad one could be making a contact or no contact. 144 MHz is often used, by default, as an IF, because of the availability of transceivers, yet is not the most ideal in a lot of cases. The following concentrates on portable and mobile rigs as small size and power consumption is a primary objective when you go true "mountain topping". All portable and mobile rigs to be discussed draw less than 400mA on Rx and will run on a 12 Volt 7Ah Gel cell for a number of hours.

Icom IC202 and IC202S. The IC202 144 MHz SSB "Portable" was released in December 1975. The IC202 introduced more amateurs to SSB on 144 MHz than any other. Its simplistic design was the secret to its success; over 500 were sold in this country in the first year. By the early eighties, many amateurs had moved on to more up market transceivers meaning IC202's were put in the cupboard. The predominance, in Europe of IC202's as IF rigs, in the eighties and nineties, means that virtually all transverter interfaces have been designed to suit the IC202's 3-Watt output. Today they are still hot property as a basic IF rig for microwave use, for around $100 who can argue!

The IC202 uses a single conversion plan with a crystal based VXO giving 200 kHz per band segment. As is, an IC202 only covered 144.0 – 144.4 MHz. With two extra crystals can be added to extend coverage to 144.8 MHz. Being xtal based, the VXO provides, even by today's standards, one of the cleanest Local Oscillator's available. A "clean" LO is important for weak signal work. When compared with the 1st & 2nd generation PLL rigs, of the Eighties, it is well in front.

The IC202 does have a few dis-advantages; the most notable is the 5kHz spaced readout! This is the weakest link in a stable 10 GHz setup! A frequency counter connected to the VXO is the only answer. G3WDG uses two IC202's in his 10 GHz EME station; one has a tiny 6mm high LED frequency readout next to the S Meter! The restricted range and the lack of FM are other inconveniences. The VXO is reasonably stable but does need alignment after a few bashings. The latter model IC202S is the most desirable for several reasons including LSB as standard! Many modifications are about to improve the IC202. The first one is to remove the extendable whip and replace it with a BNC. The second is to reverse the DC connector so the outer is the negative terminal. The largely unused battery compartment will accommodate many things including a complete MiniKit 1296 MHz 2 Watt SSB transverter!

The Icom IC402 (432 MHz) is also a usable IF rig. The IC502 (6m) is hard to use with a single 1 MHz range on the same size dial as a 202! They drift a bit too much for exposed use. The IC402 is perhaps the best transceiver of the three with double conversion and the latter improvements of the IC202S. Unfortunately IC402's are far harder to find second hand. I use both 202 & 402 in my portable set up; both have had numerous modifications including frequency counter outputs and "Codan" style SSB squelch.

Yaesu FT290R. The FT290R took over where the IC202 left off, when it came out in 1982. Many of the disadvantages of the IC202 are advantages of the FT290R and some vice a versa! It has 100 Hz readout, FM, 10 non-volatile memories, 4 MHz coverage and 2.5-Watt output. The FT290R, when used as a microwave IF, also has a large redundant battery box can be used for building in a number of options including a small transverter!

The disadvantages of the FT290R include a reasonable amount of phase noise from the PLL 10kHz step oscillator and a few spurii. Also the "100 step" VXO used to get the 100 Hz steps can drift such that you end up with either overlap or a gap every 10 kHz! If you can put up with 100 Hz click steps then don't list it as a disadvantage! As with the IC202, seasonal testing and alignment is the answer. Modifications 1 and 2 from the IC202 are applicable to the FT290R.

The latter FT290R "Mk2" was a completely redesigned rig with nearly all of the shortcomings of the earlier model fixed. It would be the best choice by far out of the portables discussed so far. Yaesu also made the FT690R (50 MHz) and FT790R (432 MHz) versions. Unlike the IC502/402 either of these units would perform equally as well as the FT290R at these alternative IF frequencies and should be looked at seriously in light of discussions about IF frequencies next month.

Stepping up to mobile SSB transceivers a number of options exist. Many seem to have similar advantages & dis-advantages.

Kenwood TR9000 & TR9130, Yaesu FT480R & Icom IC290A. All of these transceivers appeared from 1980 onwards. They all ran between 10 and 25 Watt all mode with 100 Hz steps. All are quite usable as an IF with good receivers and better PLL's than perhaps the FT290R. Disadvantages ... all have volatile memories, needing an external supply to be connected at all times (FT290R is far better here). Most require internal modifications to run 3 watt on all modes (IC290A is the exception). All have 100 Hz click steps. Some of these early digital sets can get frustrating dry joints so subject your choice to a few G forces before going portable! All had 6m and 70cm variants, again of equal usability.

Kenwood TR751A (and TR851A 70cm

version) appeared in the late eighties and seems not to have a parallel from the other two camps. A far more modern all mode rig than the TR9130 it replaced. The TR751A has LCD readout, 50 Hz steps, good audio and non-volatile memories. I have used one for a few years as a portable 2m set as well as a backup IF rig (because it has FM!) for transverters. It can be set for 3 watt all mode internally. My pick for an IF rig when I retire the IC202, as it is virtually the same size!

Most base transceivers, produced over the last 20 years, can be used as an IF rig. The pick would be the IC275A or IC820/821, both being first generation DDS local oscillator rigs. If age isn't a problem then a FT221R or TS700A will do. The main disadvantage of base units, other than size, tends to be the amount of current they consume. This is a concern when you have to lug equipment and batteries to the top of a mountain! Nearly all base units need modification to guarantee a consistent 3 watt all mode output. If you operate from the boot of your vehicle then this is not so important.

The latest crop of all mode, HF plus VHF/UHF rigs with DSP are all worthy contenders. The IC706 fits the size constraint but consumes around 2 amps on receive. The New FT817 portable has me curious, the next generation IC202/FT290R? What about homebrew? Russell VK3ZQB uses a homebrew 144 MHz rig for his portable work. Charlie VK3EMD has made up a DSP10 transceiver (QST a couple of years ago) and has plans to use this portable. Other ideas include Doug, VK4OE's, where he gutted an IC202 and built it into a 2.4 & 10 GHz transceiver in one box with digital readout! If you have the inclination and time, by all means make or modify!

Next month. Time to blow apart the time honoured convention of using 144 MHz as an IF frequency!

VK3 Easter Microwave Portable Operation.

VK5DK & VK5KK Portable at Portland with 5.7, 10 & 24 GHz

The pilgrimage to Pt Fairy is becoming a regular event! This year is was VK3EK, VK3XPD, VK3ZQB (Russell had no choice in the matter!) VK5DK, VK5KK & VK5NC. Equipment in the field included 5.7, 10 & 24 GHz portable between Moonlight Heads, Pt Fairy and Portland in VK3. Most notable signals were signals from VK5NC/P3 at Moonlight heads to VK5DK/P3 Portland on 24 GHz. Distance 141 km with little propagation. Both stations worked Russell VK3ZQB at Pt Fairy in the middle. VK5KK worked VK5NC/P, VK3EK/P & VK3ZQB/P on 5.7 & 10 GHz 59++

In later tune-up tests, Rob Vk3EK's 3.4 GHz barefoot transverter was measured at a genuine 2 mW's output. This power level was used, by Rob on 3.4 GHz, to work portable from VK7 to VK5NC/P5 on 3/1/2001 ... over 667km! That's 333 km's per milliwatt! After a tune up the transverter now puts out 5 mW so it should go a lot further now.

In closing

SERG will be holding their annual convention on the Queens birthday long weekend, June 9th & 10th, 2001. Fox hunts, commercial displays and the usual annual chat for VK3 & VK5.

At what is technically the end of the summer season it is safe to say that this has been the poorest Tropo year for about 10 years with few exceptions. Especially above 144 MHz! Despite El Nino and its other Spanish cousin, the actual peak of the Sunspot cycle has proven again that the experiences of 1979 & 1990 weren't isolated ... the peak it is not the best time for Tropo propagation.

Winter is approaching time to fix all the gear that didn't work last summer! I'll leave you with this thought, "Everyone is a self made person, but only the successful admit it"

73's David VK5KK AR

Sweet Retirement

Sheila Spargo

Retirement really should be fun
Though it's not so for everyone
For (let me whisper) some wives might
Not feel pure, unalloyed delight
To find their spouses now are free
And always wanting cups of tea.
"I'm going to a Red Cross lunch.
Find yourself a crust to munch.
And Tuesday is my tennis day.
Please mow the lawn while I'm away.
Now dear, you mustn't get too slobby
You really should take up a hobby."
Not golf! Not bowls! But years ago
He dabbled in ham radio.
A gleam comes to his eye - Of course!
He still can tap a little Morse.
His licence he obtains with flair
And very soon is on the air.
CQ, CQ out goes the call
And answers come from one and all
At last, he's in his element.
His loving wife is quite content
For while he's busily CQ-ing
She can get on with what *she's* doing.
The smallest bedroom is his shack
It has a nice view out the back
Where under his appraising eye
Antennas reach up to the sky.
She wages a defensive war
To stop him raising more and more.
He's always learning something new
And now he sends out pictures too -
Can reach Alaska in a trice.
She thinks it's cheap at half the price
To have a man content and busy
And never have to ask, "Where is he?"

Pounding Brass

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A technical look at mainline sounders: final part

The whole object in using mainline sounders or basic sounders in general, whether they be 4ohm, 20ohm or 150ohm, is to obtain an increased sound as compared with that given out by the morse relay.

For a mainline sounder to produce audible sounds loud enough to be heard in a busy telegraph office, the sounder should possess considerable mass, its moving parts must be actuated quickly and without any lag, the use of a strong spring and large electro-magnets of considerable strength must be used.

Sounders are basically electro-magnets; the magnetism developed increases with the strength of the current within the sounder coils, and also with the number of turns of wire. The magnetism developed within the sounder is directly proportional to the current strength multiplied by the number of turns of wire in the coils; we call this "Ampere Turns".

To product an audible sound that is a clear and distinctive "click" the sounder requires about 250mA in its coils for correct operation. Let's assume the number of turns to be 900 and the line current to be 250mA the ampere turns of the sounder will be 225.

Eg. Amp/Turns = No. of turns x current
= 900 x 250mA
= 225

Mainline sounders are used on mainlines and have a resistance of 20ohms as compared to ordinary sounders which have a resistance of between 4 to 5ohms. Commonly used sounders were the "Bunnell", "Westen Electric" and the "Victor", these were distinguished by the use of either a spiral or retractile spring set up plus minor modifications to the sounder itself.

Let's look at some examples.

1. A local circuit consisting of 2 cells and one ordinary sounder of 4ohms, total resistance will be:-
   2 Cells, with an internal resistance of 2ohms each = 4ohms
   1 Ordinary sounder, 4ohms = 4ohms
   Total Resistance of circuit = 8ohms
   EMF of 2 volts divided by total resistance gives a current of 0.25 ampere.
   Ampere turns = 0.25 x 900 = 225 as stated earlier.
2. Let's operate 4 X 4ohm sounders on a circuit with a wire resistance of 100ohms and increase the battery to 30 cells, we have:-
   30 cells, with an internal resistance of 2ohms each = 60ohms
   4 X 4ohm sounders = 16ohms
   Resistance of circuit wire = 100ohms
   Total Resistance of circuit = 176ohms
   Line current will be 30 divided by 176 = 0.17 ampere

Ampere turns = 0.17 x 900 = 153

This is considerably less as in example 1. to satisfactorily operate the 4ohm sounder.

If we now use mainline sounder and substitute the 4ohm with 20ohms we get the following.

30 cells, internal resistance of 2ohms each = 60ohms
4 X 20ohm mainline sounders = 80ohms
Resistance of circuit wire = 100ohms
Total resistance of circuit = 240 ohms
Line current will be 30 divided by 240 = 0.125 amp

The number of convolutions on a mainline sounder is 1800; we thus obtain 225 ampere turns.

"Convolutions", in the English dictionary means: -

"Act of rolling together or on itself, a winding, a spiral"

Current strength was reduced from 0.17 to 0.125 amps by the additional 64ohms of the mainline sounders, magnetic strength increased by additional convolutions to a point nearly the same as that of the 4 X 4ohm sounder in the above example.

Line relay & sounder coils were constructed using silk covered wire. Standard specifications of the time were 4ohm sounder, 10 layers of No. 24; B & S Wire on each core & 47 convolutions to each layer. Which is 940 turns in all.

Specifications for the mainline sounder were 20ohm; 14 layers of No. 25; B & S wire on each core & 67 convolutions to each layer. Which is 1876 turns in all.

References used:

The Telegraph by Lewis Coe
American Telegraphy by William Maver Jr
Plus my collection of Telegraph notes VK2SPS

Next month a look at Telegraph Internet sites and what's available to the radio amateur

ar

Ham Shack Computers

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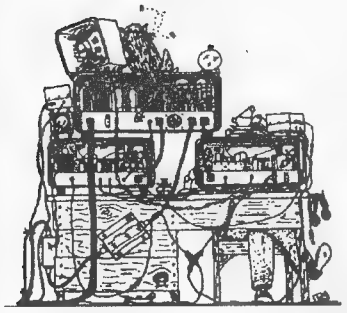


Part 2 –

Hardware

In the 1970's, US Company Tandy Corporation produced the TRS80 in three versions from Mark 1, 2 and 3. Programs were written in BASIC (Basic All-Purpose Instruction Code), and stored on ordinary audiocassette tapes. Many RA's world-wide wrote BASIC TRS80 programs and used them successfully on air kick-starting the well known packet radio revolution.

Personal computers really got going from the early 1980's when IBM Corporation mass-produced the famous "XT" computer. These were slow by modern day standards, but with the release of a simple Disk Operating System (called MS-DOS™), AR operators were free to experiment. Microprocessors were produced by Intel™ Corporation (called the 8080) and worked at about 4 Mhz. Memory was limited to 640 kilobytes on the main XT board, but additional Random Access Memory (RAM) could be added to give about 4kB of affordable expansion.

The "clone makers" soon replicated the original XT idea producing their own versions of the "IBM compatible computer". These early machines used two 5_" floppy disks each with a capacity of 360kB. One handled the DOS operating system, and the second for programs and data storage. Clumsy - but usable in the blossoming Ham Shack.

Intel 286 (the AT) computers soon followed and later in the 80's the Intel 386, 386SX, 486SX and 486DX etc. These machines got RA's "moving and shaking" with bigger and faster machines. The older XT's had sported internal hard drives of about 20MB and 720kB floppy drives and XT's started to flood the second-hand market. Great for Ham Radio operators on a tight budget!

By the mid 80's the desktop and later mini-tower, midi-tower and full-tower cases were common place. Microsoft Corporation Inc struggled to improve their DOS operating system – from MS-DOS version 3.3 through controversial versions of 4, 5 and DOS 6 were all common up until MS Windows 95 finally surfaced in August 1994. MS Windows for DOS had been used for sometime on the AT's. However, Microsoft launched their first experimental "full" release of MS Windows version 3.0 in 1990. This failed dismally so version 3.1 quickly landed in the marketplace.

During this traumatic time of "rampant up-grades", manufactures had produced bigger and better machines, more memory, bigger hard drives, stereo sound cards, CD-ROM's and more. It became a race to keep up with "the Jones's" which still prevails today. It was not until Microsoft produced an "adaptable" 16/32-bit operating system with the release of MS Windows 98 that high-speed machines could come of age.

What's Next?

Today, the choices are enormous. Intel, AMD and IBM each manufacture a wide range of different processors, whilst component manufactures offer a huge variety of motherboards, memory and high-speed CD-ROM's that can read and write. Cameras and microphones have appeared and many other add-on devices like the USB (Universal Serial Bus) ports on newer ATX class machines arrived.

Check out the latest edition of "*Australian Personal Computer*" Magazine. The magazine comes with a huge amount of software on CD-ROM and is a fine start to your software library. Then rummage through the advertisements and develop your own specifications, prices and information for what you would like in your shack.

Where does all this now place the average Radio Amateur in their Ham Shack? It's a complex decision process and daunting for today's AR newcomer.

Part 1 outlined some of the source options for older computers. These ranged from the local tip, computer recyclers, magazine advertisements, fellow club members and friends – through to that modern "all-in-one package deal" from the bigger retailers.

Getting a Quote

A better option would be the planning suggested in Part 1. For a modest new computer, let's suggest the following basic specification and a shopping list, then get some quotes from around the dealers before any decisions are made.

1. Midi tower ATX case and PSU.
2. A "BX Celeron" motherboard with 2 USB, 2 serial and 1 parallel port.
3. Intel "Celeron" 500MHz processor and companion daughter board.
4. 64MHz of fast RAM.
5. 4GB (or larger) IDE hard drive.
6. 16/32 bit Sound Blaster compatible stereo sound card.
7. A 1.44Mb floppy drive.
8. One high-speed CD-ROM drive.
9. Microsoft compatible USB mouse.
10. Microsoft Windows 98, 2nd edition on a CD-ROM.

A good quality secondhand 15"SVGA monitor will save heaps of money. All the above items should cost less than $1,000 new. However, you will still be able to do all the modern "whiz-band" stuff in your own shack. Adding a phone line modem (about $75 new) and you'll be on the "Net" looking for software, working DX stations on PSK31 – AND programming your bright new Yeasu FT8100R multi-channel FM VHF/UHF transceiver all at the same time!

A Cheaper Option!

Remember the older Intel 486DX2/50 mentioned in Part 1. Well, this is a little wonder machine when MS-DOS 6.2 has been installed. With a secondhand 14" SVGA monitor and a serial mouse, these machines will run your packet radio station, do all your logging and QSL management, and keep the family happy with a few crazy games! The cost will be far less than $100 secondhand.

Microsoft DOS version 6.2 is the better MS-DOS system and NOT currently available at computer dealers unless some "scrounging" is done from dealers, friends and club members. HAM COM is a nice easy MS-DOS station logger written by VK2VN (QTHR). TPK 1.82 is a first class packet radio DOS based software package and it's free. For a packet modem, try a $50 BAYCOM kit from your local club or secondhand from a friend. Again, the software is free!

MS-DOS 6.2 (on 1.44Mb floppy disks) comes with all the tools to manage your shack computer including a simple text editor, and essential MS diagnostics tools like Scandisk, Defragmenter and Memmaker software.

Doing It Yourself

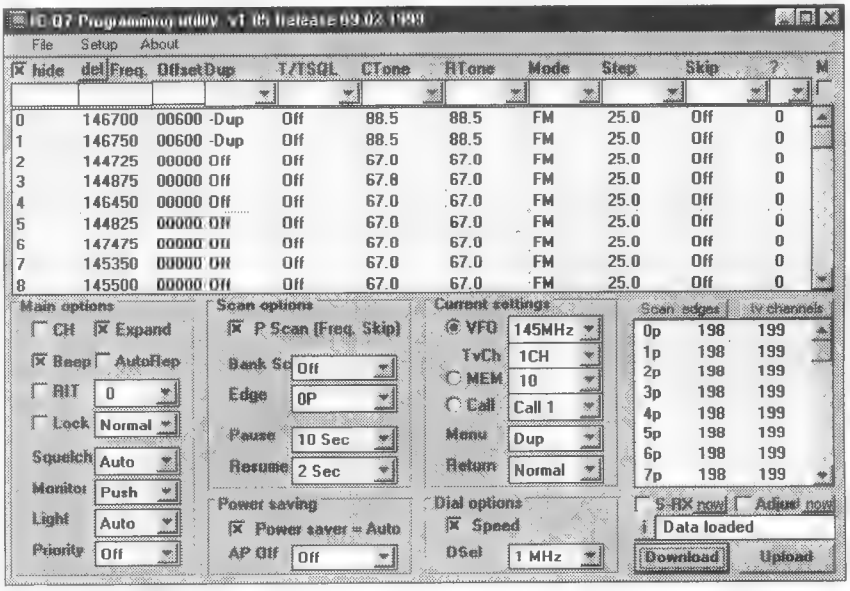
Well within the capabilities of the curious RA operator. After all the bits have been gathered together, assembly is very easy to do. Follow the instructions for each of the components until the hardware has been assembled.

Once assembled - at first switch on, the computer processor can read the on-board BIOS (Basic Input & Output System). Parameters are entered allowing the software to be "configured" so that the computer "knows" that you have a hard drive (called the C:\drive), a floppy drive (called the A:\drive) and other key components. Set the A:\ drive to BOOT FROM (meaning to start MS-DOS) followed by the C:\ drive.

Work through the screen prompts and SAVE, then EXIT. Shut down the computer - then open it once again.

Booting Up

Your kit of parts should include an MS-DOS 1.44Mb BOOT disk containing the essential files to run DOS and to add the CD-ROM as a new drive D:\. Once this is done, by following the README instructions on the disk, then the computer is ready to install the full version of MS-DOS or MS Windows 95, 98, 2000 or ME (Millenium Edition) from either the floppy drive or the CD-ROM drive. Work slowly and follow all the screen prompts until the installation has been completed. Then re-BOOT!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6 147475 00000 Off Off 67.0 67.0 FM 25.0 Off 0
7 145350 00000 Off Off 67.0 67.0 FM 25.0 Off 0
8 145500 00000 Off Off 67.0 67.0 FM 25.0 Off 0
Main options
Scan options
Current settings
Scan edges
Download
Upload

Adding Ham Shack Software

There are thousands of software packages available, and it's your choice on what your next steps will be. The first task is to become familiar with how your new operating system works. This is best done from software handbooks or advice from friends. Many AR software packages come as "self-extracting" files. By just "clicking" on the file, the installation process becomes automatic, with prompts asking for your NAME, QTH, RIG and sometimes the LICENCE NUMBER. The self-extracting file is "unzipped" producing a long list of new files installed on your hard drive. From the list, select the file called say - "logging.exe" and "click" the mouse to simply run the program.

At this point, assertive readers will understand that this series of articles cannot possibly cover all of the aspects of setting up and running computers. It would take up the whole of *Amateur Radio Magazine* for at least a year just to make a small dent in this mighty topic!

One Good Example

You might have a nice little "cutie" – the Icom IC-Q7 handy transceiver that's a nightmare to program using the tiny multi-function buttons on the front panel of the rig. With the right software in the adjacent picture (1) and a DIY stereo audio cable with a serial port plug on one end connected to a spare computer communications port. Then you can program the software. EG: 200 memory channels – including air-band AM, FM repeaters and offsets, FM simplex, beacons, slow Morse sessions, TV sound channels, favorite AM and FM broadcast stations all in the little tiny "cutie". When done, hit the UPLOAD button and every parameter will be stored in the rig. Great, now you can impress everyone at your next club meeting! Similar packages are available for dozens of modern Yaesu, Icom, Alinco, Kenwood and Ten Tek AR equipment. Most of these programs are available on the Internet as "freeware" or modestly priced "shareware" products.

Part 3 of *Ham Shack Computers* overviews MS Windows 95/98/2000/ME based logging, control, packet radio and QSL card programs which will really lift the productivity of your own Ham Shack.

Ham Tip No. 2.

At your next club junk sale, look for a Data Transfer Switch box (around $5). This device allows RAs to select different Ham rigs to a single computer communications port – or visa versa.

(1). Free Icom IC-Q7 software at: www.croswinds.net/frankfurt/~valaski/

(2). More AR resources can be found at: www2.tpg.com/users/vk6pg/vk6sig

73's de Alan, VK6PG

AR Over to You

Note 1 Views expressed in letters are those of the authors and do not necessarily represent the policy of the WIA.
2. Some of the letters may be shortened to allow more letters to be published.

Re: WIA into the 21st century report No1

As a non-VK5, I hesitate to comment here, but here goes....

One point I will comment on at this stage is the magazine. I think it would be a mistake to under-rate the potential value of this medium.

I agree entirely. I notice that April's R&C makes rumblings about possible amalgamation with AR. Also I've heard noises from other quarters along these lines as well. AR magazine is not perfect (needs some good proofreaders at the moment, and some decent technical articles to stem the slide into history and aimless reminiscing).

Hit the send button too soon! I should have completed the above sentence by saying that it compares quite favorably with overseas and commercial magazines due to its constructional and technical articles. AR is also WIA members' most tangible asset, and one of the top two or three WIA activities that members value.

Scrapping AR would cause a huge members backlash, and is something we don't need.

Peter Parker VK3YE

Compulsory membership

On the surface, the comments against compulsory membership have validity, and certainly seem to make sense in areas. However, the fact remains that this type of structure already exists and works in Australia, CAMS being one example.

CAMS are the national government recognised representative body – no membership - no motor sport. It does work. You can argue that the CAMS organisation needs improvement, but what organisation doesn't. The fact remains that it is there, it works, it is viable, and it is accepted that in order to hold a competition licence, a person must belong to an affiliated club and therefore belong to CAMS. Of course there are differences, but it is a starting point for discussion.

73, David Burnett VK5AXW

Reforms the Easy Way

All of Martin Luther's wish list can be implemented by using the enabling articles of the existing Memorandum and Articles of Association and by amendments to others.

Article 2 for example permits an unlimited number of member divisions provided these qualify according to article 3(a), which could be amended to read "Such corporation in the opinion of the Council represents the views of a group of Australian radio amateurs." The existing last words of 3(a) are the reason for the division political boundaries.

There are other articles which could, by suitable amendment, enable other reforms; article 30 for example, suitably amended, could ensure that Councilors and other executives are elected by a postal poll of ALL members.

Maybe Martin doesn't have a copy of the M&A; these are sometimes hard to acquire. I don't think any member is qualified to contribute to the present discussion if he/she is not familiar with the contents of the existing M&A. I have tried to persuade previous editors to publish the M&A in AR without success. These are lengthy documents and publication in several parts would be necessary. Publication could be followed with a Quiz entitled "How much do you know about your WIA Constitution."

I agree with Ken Fuller, the present organisation is the result of careful consideration in the beginning and years of development, including learning from mistakes, there is no point in repeating that process. The deficiencies perceived by some (including me) cannot be remedied by the actions proposed by Martin and his fellow conspirators. We already have "a national body that is owned by the members" and there is no real impediment to the owners resuming control and introducing improvements.

Lindsay Lawless VK3ANJ.
Box 760 Lakes Entrance Vic.3909

More letters on page 56

Response to the pro-morse brigade

Oh dear! I thought that when I retired from teaching that I would not have to teach people to read. Unfortunately, a couple of letters in the February issue of AR convince that this is not the case.

Fred Smith uses some ancient Persian philosophical terms to launch an oblique attack upon my stance. I see no connection between the wish to dispense with Morse as an examination requirement and Zoroastrianism. not Zocrastian Fred! By the way I could teach a couple of five year olds to tap out SOS in a couple of minutes and then let RDF find the lost travelers. Sorry, not a valid argument Fred.

Now G.W. Lanyon suggests that I have a go at my 5 wpm exam. I suggest that he re-read my letter and have a look at my call sign. I went full call in October, 1999 Mr. Lanyon.

Now let's repeat what I did say. I said that Morse was an anachronism. I do not retreat from that viewpoint. I said that Morse has kept many aspiring people from joining our ranks. Instead these people have turned to computers and chat rooms, etc. Many amateurs get their regulations and full call theory but can't be bothered with Morse. I know several of these people in our radio club and they are quality people who would be an asset to the full call ranks.

I did not say that Morse should be done away with! If you enjoy Morse that's fine as far as I'm concerned but don't jam it down people's throats. Indeed, I have used Morse-myself being able to read at around 14 wpm and send at a higher rate. But it is not a mode I enjoy

I did say that I have found many pro-Morsers are hypocrites and use computensed Morse. I see no reason to retreat from that remark.

If the pro-Morse brigade as so correct then they should also be pushing for examinations in other digital modes such as RTTY, Packet, Amtor, PSK 31, etc. How ridiculous this makes their argument.

Roll on the day when Morse becomes just another non-examinable mode.

Ian Gray VK2IGS (FULL CALL!!)

HF Predictions

by Evan Jarman VK3AI
34 Alandale Court Blackburn Vic 313

These graphs show the predicted diurnal variation of ke frequencies for the nominated circuits.

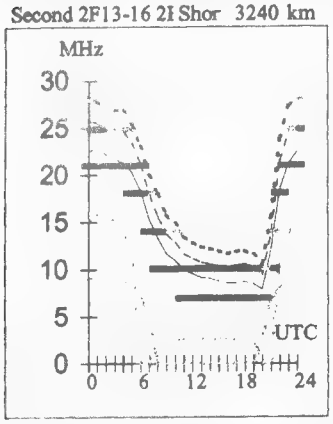
These frequencies as identified in the legend are:-

- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands i ranges between these key frequencies, when usable. The pati propagation mode and Australian terminal bearing are also give for each circuit.

These predictions were made with the Ionospheric Predictio Service program: ASAPS Version 4

Adelaide-Auckland ##
Second 2F13-16 2I Shor 3240 km



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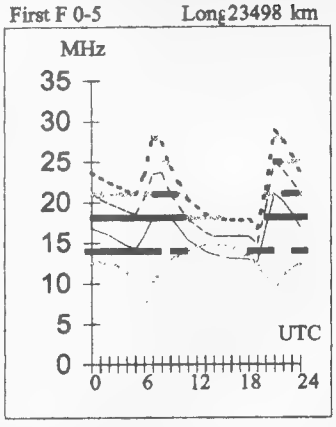

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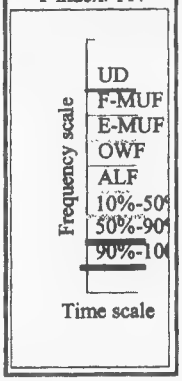

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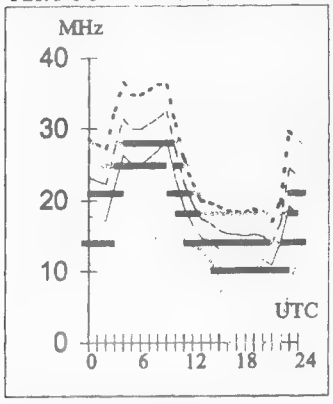

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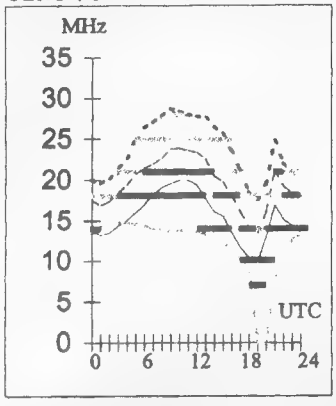

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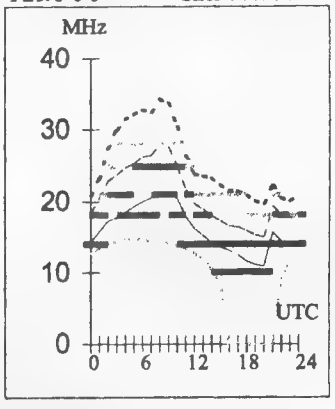

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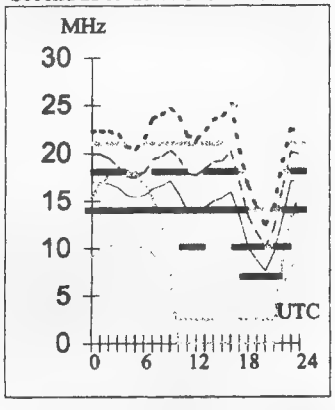

Adelaide-Honolulu 57
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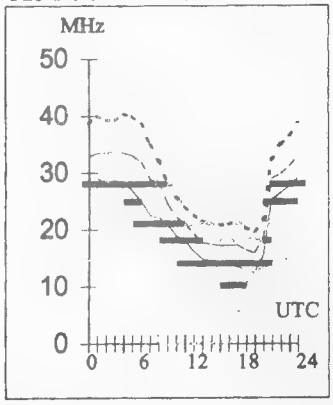

Brisbane-Ottawa 52
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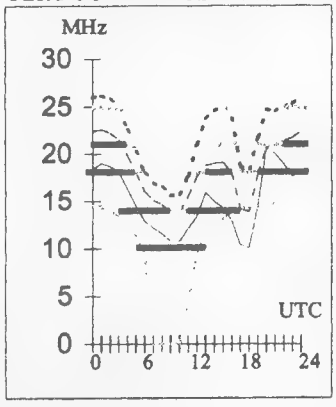

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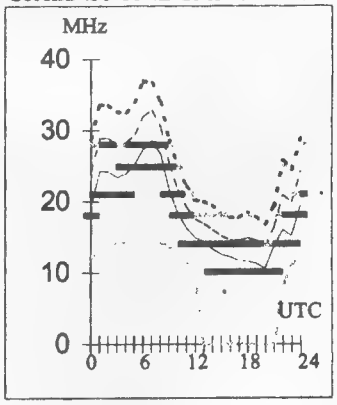

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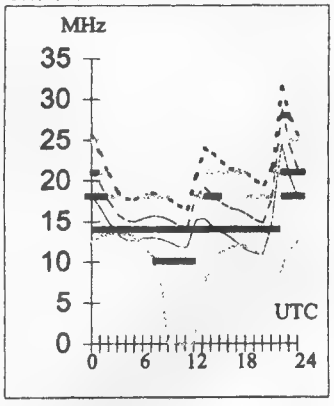

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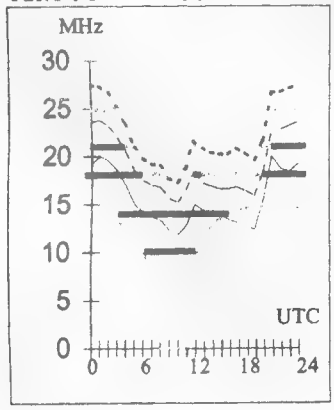

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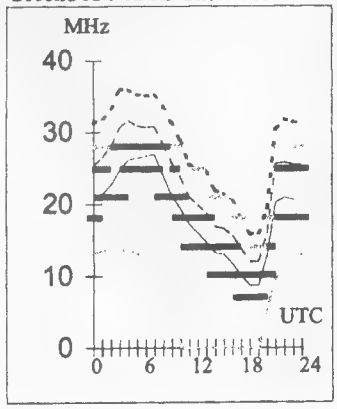

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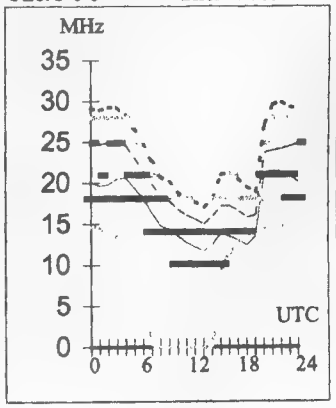

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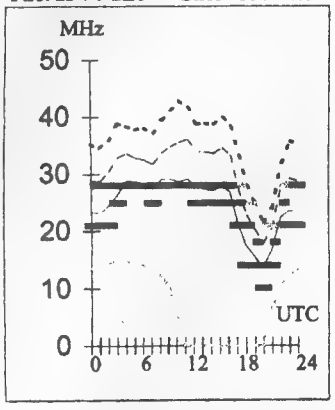

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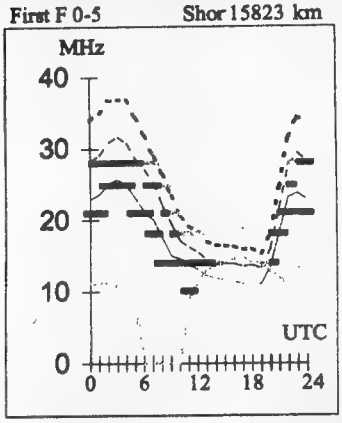

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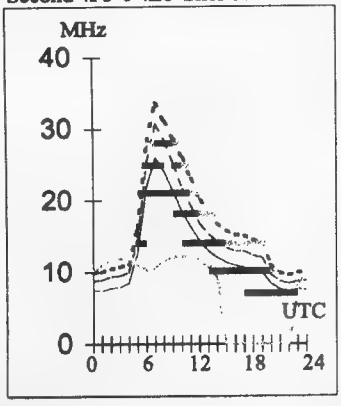

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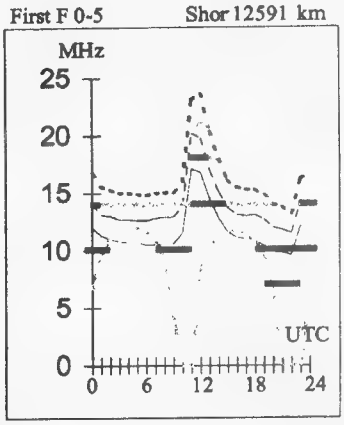

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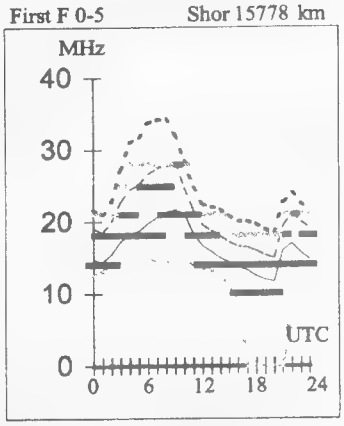

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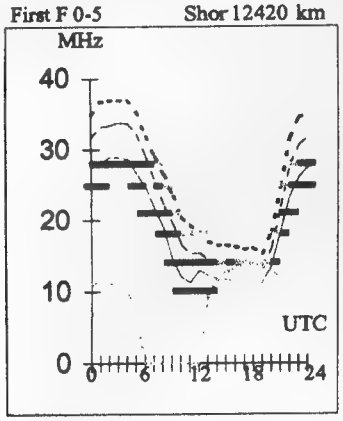

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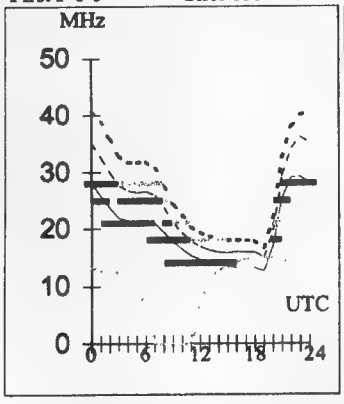

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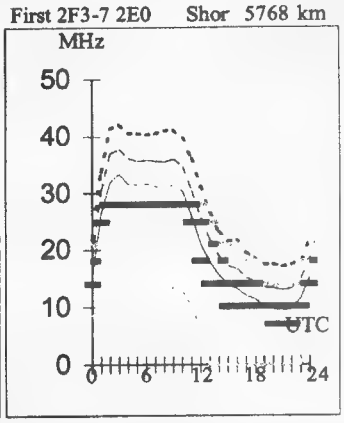

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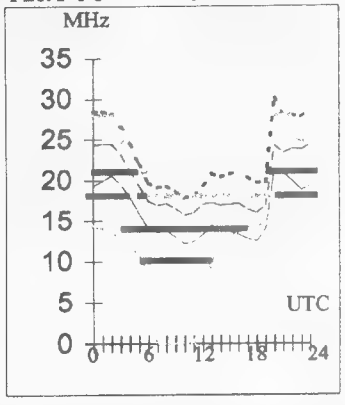

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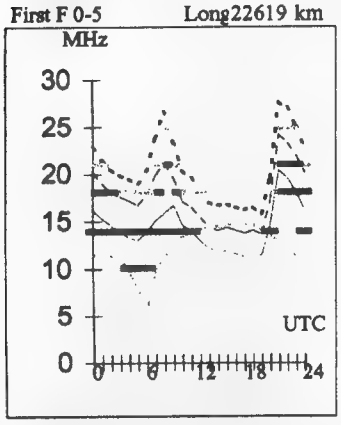

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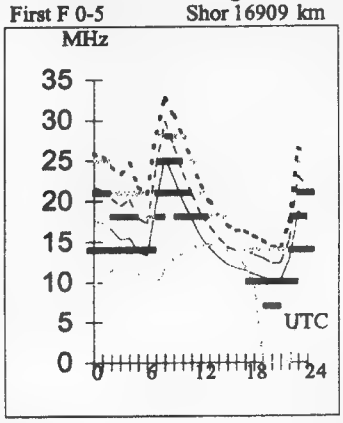

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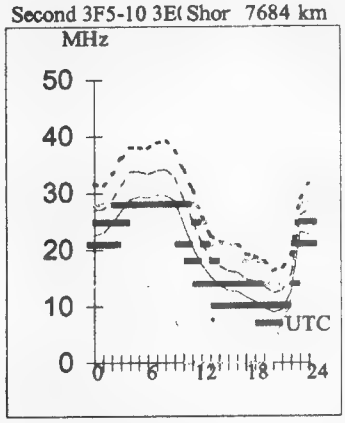

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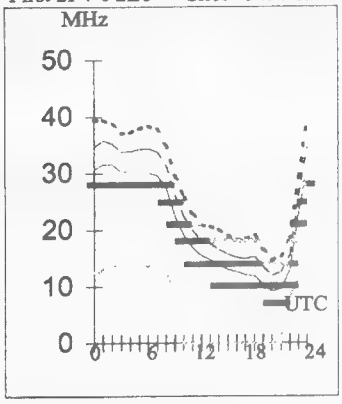

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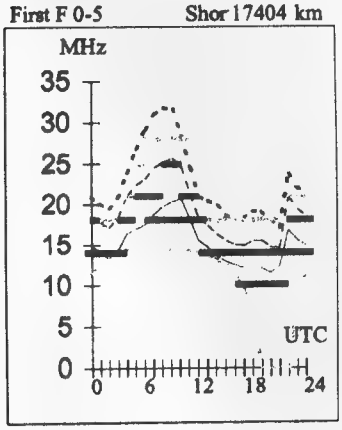
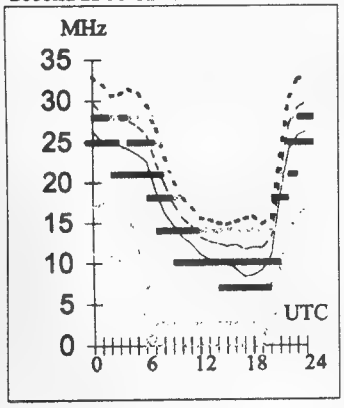
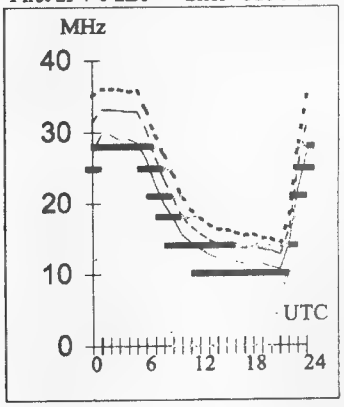


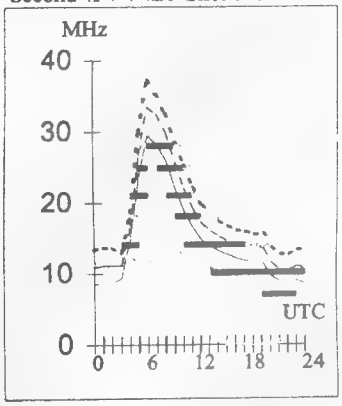
Melbourne-Suva 65
Second 2F10-12 2E Shor 3913 km



Perth-Wellington ##
First 2F4-6 2E0 Shor 5256 km



Sydney-Pretoria ##
Second 4F4-4 4E0 Shor 11063 km



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- Please submit separate forms for For Sale and Wanted items, and be sure to include your name, address and telephone number (including STD code) if you do not use the flysheet.
- Eight lines (forty words) per issue free to all WIA members, ninth and tenth lines for name and address. Commercial rates apply for non-members.
- Deceased estates Hamads will be published in full, even if the ad is not fully radio equipment.
- WIA policy recommends that the serial number of all equipment for sale should be included.
- QTHR means the address is correct in the current WIA Call Book.
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Postal: *Newsletters Unlimited, PO Box 431, Monbulk Vic 3793*

Please send your Hamad by ONE method only (email preferred)

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• Kenwood all mode 2m TR9000 $250. Kenwood all mode 2m TR751 $550. Kenwood all mode 70cm TR851 $550 All with mobile mounts, service and instruction manuals. Glen VK1G Phone 02 6254 8002

FOR SALE - NSW

• Kenwood station 4405 7"A 8"A MC85 P550 $2200. MML 100S amplifier. Azden PCS4000 coax relay. Reyco type 101 inline satelite antennas. TET 10el XYAGI 144MHz. MMK1691, 137.5 WXSAT converter. Call Colin VR2JCO Phone 02 9803 1760

• Deceased VK2UN offers wanted Uniden 2020TX, Yaesu FRG7000, Yaesu FT901, Yaesu FRG8800, MFJ tuner, Osker SXR200, Delta4 coax switch, antennas, 2m 5el beam, coax etc. Ring Colin VK2JCO Phone 02 9803 1760

• Kenwood AT120 $70ea. Yaesu 707 T/R $425. Revex W502 $140. Kenwood QR666 comm RX $125. SWR bridges $40ea. PK232 $200. DSE frequency counter $125. Digital multi meter $40. MFJ752 signal enhancer $180. A&R 2m linear $80. B&D twin beam scope $160. Estate VK2DBD. All o.n.o. Phone 02 4393 2626

• Yaesu FT-101ZD HF SSB transceiver plus Yaesu FL-2100B amplifier plus Emtron EAT-300A Antenna tuner plus Yaesu desk dynamic microphone MD-1. $950 the lot. Brian VK2GYT Phone 02 6972 3634

• Kenwood transceiver, model 440S-AT. Good condition, recently serviced by Kenwood. Doug, VK2DDR. Phone 02 9949 3426

• Yaesu FT200RH 2m handheld 140/150 MHz, 5 Watts output, case, book. Very good condition. $190 - ono. Peter VK2BPO QTHR, Phone 02 9713 1831

• Icom IC-275H 100W all mode 2metre transceiver $900. Kenwood TS-660 10W all mode 6m quadband transceiver $500. Lutron FC-1200 handheld 1.25GHz frequency counter $125. All items in excellent condition, with original packing boxes and instruction manuals. John VK2TK, Phone & fax 02 9416 6906, email pathways@rivernet.com.au

• Kenwood 440s transciever $850. Autoplex CW bug mod 8747 $50. John VK2EHZ QTHR Phone 02 6655 0893

• Yaesu 847 new bought it to put in car for mobile, sold the car, will not fit in new car, no room. Have fitted Collins filters also still under warranty plastic still on the dial also Emtronics power supply EPS-20 ST new in box $ 195. A.Walsh VK2TBW awalsh@acenet.com.au

WANTED NSW

• Wanted 6 metre transceiver. Peter VK2EMU (02) 9584 3236 vk2emu@arrl.net

• Wanted front end for GEL0S0 receiver or complete GEL0S0 G209R receiver either amateur bands or general coverage. Will buy or swap. Ray VK2AWQ QTHR Phone 02 6494 1347

• Galbraith morse paddle. Bob, VK2AVQ, QTHR Phone 02 9878 2359

• Information on Advance sig-gen type 62 serial no. 1043, six ranges 150 kHz 220MHz single 12AT7. Write Stanley Dogger, 116 Tunnel Road, Stokers Siding, 2484

• Copies of the series of articles on the Deltahet Comms receiver published in E.A magazine circa 1969/1970. Will pay reasonable costs for legible photocopies of full articles including circuit diagrams. Pat Brennan VK2ABE PO Box 158 Tamworth NSW 2340

FOR SALE - VIC

• Fluke multimeter Model 73 new unused with leads and instructionbook $150. HP 8640B signal generator full working order VGC with 50 watt reverse power protection option $950. Phone 03 9963 6884 John Rickard, email jrickard@aca.gov.au

• Kenwood TS820 SER 450796 dig readout c.w. filter SP520 speaker. MC50 desk mic and four new spare finals $425. Icom IC2E 2m hand held SER1735 with carry case and recent nicads $120. Rack comprising H.F. linears (2) and 2m linear (1) $100. Merv VK3AFO Phone 02 6024 2537

• Big transformers. "A" Primary 0-200-220-230-240V. Secondaries 30V 1A, 110V 0.5A, 0-18-20-22-24V 8A $50. "B" Primary 0-200-220-240V. Secondary 1500-0-1500V, 300mA $50. Bill VK3ZWO 03 9598 6304 QTHR

• Icom IC706 MK2 HF-2m transceiver with UT 106 DSP unit installed plus Emtron EPS 20st power supply. Dick Smith D4822 2m base antenna and D4825 6m base antenna. Cost over $3100 new. Yours for $2400 ono. Yaesu Musen Co FLDX400 transmitter $100. Heathkits SB101s 3 for you. 1 working, 2 for spares 21 valves each unit. $150 lot. Terlin outbacker HF-6m mobile antenna brand new in box never used $300 or give me $3000 and take the lot. Urgent sale, going to Poland. Contact Anthony VK3JIA QTHR. Phone 03 9728 4305 or 0408 564 589 anytime.

• "Dick Smith" D3800 Variable Power Supply 0 to 15V. 20A at 13.8V. S/N 92519182. $160 including P/P Aust. "YAESU" FP700 20A Power Supply with built in extension speaker. S/N 4F080001. $160 including P/P Aust. Bert VK3DVY Phone 03 5221 6804. email virgo@webaxs.net

• YAESU FL-2100B linear amp $500. HY GAIN TH3jr antenna, needs TLC $100. DIAWA rotator including DC7055 round controller (preset type), DR7600Q complete with top & bottom mast clamps & spare (DR7600Q condition unknown) $250. Telescopic mast 3 section & various mast sections $50. 250 ft 3/8in coax cable $50. KENWOOD SW2000 SWR/PWR meter with SWC-3 coupler 1.8-54MHz, 3 antenna selector $150. BWD 101 AM/FM signal generator 100kHz-100MHz (unknown serviceability) with maintenance handbook $150. Can email pictures if required. Reasonable offers considered. Peter VK3BPN QTHR Phone BH 03 9580 9518 AH 03 9551 7346 or email peterco@alphalink.com.au

• AVO 8 Mark 6 multimeter in leather case like new condx. Offers? Damien VK3RX Phone 03 5427 3121

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RAOTC,
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Sandringham VIC 3191

or call Arthur VK3VQ on **03 9598 4262** or Allan VK3AMD on **03 9570 4610**, for an application form.

• IC 28AE as new 144-148 5 - 25W 25 mem channels sn 14998, extended Rx range $300 ono. IC 2400AE Immaculate, 2m 70cm 45 watts, 42 mem channels sn02960, extended Rx range $700. Keith VK3AFI – QTHR, Phone 03 5221 3658

• Alinco DR599 Remote head Kit. New , Still in package $100. Claus Salger VK3AZE Phone 03 9309 4462 or claus@alphalink.com.au

WANTED - VIC

• VHF Transceiver, ALL MODE, older style base station type like TS711A or FT221 preferred, details of price, make, age & condition to VK3FH QTHR, Phone 03 5986 1592. email:- jforster@alphalink.com.au

• Wanted satellite receiver e.g Proscan R139 RX2 manual and alignment tools necessary. Ken Morgan VK3CEA Phone 03 9592 9957 email kea@ozemail.com.au

• Philips FM828 MK2 tcvr band "B" in good order. Alan Phone 03 5985 6213

• Manual or at least circuit diagram for Advance signal generator model SG62B. All costs refunded. Drew VK3XU QTHR Phone 03 722 1620

• Spreader insulators only from 300 ohm TV open wire line, dogbone preferred. Installers check your offcuts. Wire not required. T.R. Naughton VK3ATN QTHR Phone 03 5492 2224, fax 03 5492 2666

FOR SALE - QLD

• Radiotron Designers Handbook 4th $40. 4 only 811A used $80. Caps 10,000 UFD 40V (6) $12. Hills SS Yagi 148 MHz 7 el corner reflector $40. Peter VK4APD Phone 07 3397 3751 peterhadgraft@yahoo.com

• Antenna: Spider Multiband (USA for mobile, maritime, residential with space restrictions. Vertical, four resonators (10, 15, 20, 40) with patented tuning sleeves, abt 2lbs height 6 ft, anodized aluminium. Outstanding performance (balcony use 100W 177 ctrs) request brochure! Rated 200W PEP with bracket, ball-mount, 100 ft 213U/50 coax. $300 ono. Hans L40370 ex HS1ALK. Phone 07 5470 4561

• A AH Traeger transceiver model 54S20 No 1 1726 as seen in 'Back Of The Big Beyond' with Tom Kruse in GWO and big and heavy. Swap for dedicated tube LF Tx/Rx or simlar. Paul VK4YKR Phone 07 3371 4486

WANTED QLD

• WWII Japanese transmitters and receivers (parts, plug-in coils etc). Also German equipment for restoration. Ray VK4FH Phone 07 3299 3819, fax 07 3299 3821, PO Box 5263, Daisy Hill Qld 4127

• WWII ex military German and Japanese Radio Equipment. Also AMR 100 receiver and services amentities. Receivers type V5 Aust. sound systems, AWA type C17020. Ray VK4FH PO Box 5263, Daisy Hill Qld 4127, Phone 07 3299 3819, fax 07 3299 3821

FOR SALE SA

• RF signal generator TE 20D freq range 120 kHz to 500 MHz in six bands. Older valve model. Very good. $50 VK5BVJ QTHR Phone 08 8738 0000

• Rotator Emotator 502 SAX control box, 15 m six core cable, all SS bolts used with three element, three band Yagi, $150. VK5BVJ QTHR Phone 08 8738 0000

WANTED SA

• Information on Marconi transmitter/receiver output test set TF1065A. Instruction book, circuit etc. Steve VK5 QTHR Phone 08 8255 7397

• Battery charger for Motorola HT-220 handheld. Hank, VK5JAZ, Mobile 0403 285 940

WANTED WA

• Power transformer for Yaesu YO-801 Multiscope or old unit with good transformer. VK6ABS QTHR Phone 08 9075 4136

• Variable air capacitors needed for projects. Please help Phone 08 9771 1664. Ring after 10.00 UTC week nights

FOR SALE NT

• Icom ICR 7100 Receiver ser. 04150, 25 MHz to 2 GHz, plus Icom AH 200 Disone antenna plus 20m feeder, $550. VK8FT 4/11 Lorna Lim Tce, Driver 0830. Phone 08 311 881

MISCELLANEOUS

• The WIA QSL Collection (now Federal) requires QSLs. All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, tel. (03) 9728 5350

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Silent Keys

The WIA regrets to announce the recent passing of:-

K C (Ken) Seddon VK3ACS
(JOHN) Kelly VK3AFD
A (Al) Bowley VK3AP
W A Trenwith VK3ATW
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Over to You

continued from page 51

Contests

After 40 years of experience in Amateur Radio as a DXer, I would like to respond to the letter of Martin Luther, VK5 GN, about contests (Jan. 200 1).

It gives me trouble to read that VK5GN is one of the members of the WIA who have put his thoughts in print about the future of A.R. His pro-contest-arguments are alarming. Let's for instance find out what consequence it is if we only analyze these over ten thousand so-called QSOs of the CQWW leading station he mentioned.

10 000 contacts means to scream out "fifty-nine" at least 10 000 times and "Queue-are-zett" probably even twice the amount. A world-record in redundancy and narrow-mindedness! And where is courtesy? ("Your call!!", "What !!", "Again!!") To speak of a "QSO" is out of place. In such a "QSO" the most important components, like an honest report, name and location are missing. You can't even test your antennas because you'll get your "fifty-nine" from all directions, no matter what wet piece of string you are using. That means no information is exchanged, except a mendacious report and a meaningless number. Absolutely no communication! And that's one of the main reasons why contests provoke the complete destruction of A.R. It's the result of a misleading education. It's an outgrowth caused by those people in the ham-radio- society who never ever have understood the meaning and the magnificent possibilities of AX, for instance, operating for world-wide friendship and understanding, learning and practicing languages, comprehending geography or exchanging technical knowledge, let alone international and cultural interchange of ideas and other innumerable fields of knowledge. Their answer is "That's not my cup of tea!" However who gives them the right to turn the short waves regularly into a refuse heap, blocking a reasonable activities? To scream out "fifty-nine" for 48 hours is without rhyme or reason. It is the language of blockheads. This scenario definitely takes over the bands on every weekend. In fact it is the fastest growing area of our hobby, a perversion which has only scores in view, as many "fifty-nine" as possible in a fixed amount of time.

To furnish proof in the year 2000 we had no less than 417 contests word-wide. That means we had 8 contests each weekend on average. These undisciplined people do not care about anybody and act at the cost of people operating by means of good style. For their flash contacts they appear everywhere a frequency seems to be quiet for only a few seconds. Many of them using a tape recorder come over you by an overmodulated machine-gun-voice as if it were a matter of life and death. A serious amateur has to switch off his rig, because it is impossible to maintain any conversation.

Is there any rational human being who can enjoy such a stupidity in wasting time, frequency spectrum and power? Psychological studies uncovered that the only reason why so many people participate in a contest is to be seen in their incompetence to converse, their irresponsibility in view of operating skills and their inability to perceive feeble-mindedness. Powerplay, egotism, self-deceit and incredible simplicity take the place of the once highly praised ham spirit.

VK5GN1s statement, contesting to be a good method to easily outscore a good conversation speaks for itself Amateur Radio at level zero - apparently the world he feels at home. And what about contest-free WARC bands? Listen there and you will hear a great many contest-contaminated followers in a private contest shouting their primitive "fifty-nine". Under this state of mind it is quite obvious that the day will come when you will hear contests everywhere you go and all the rest of a once glorious and demanding hobby finally will consist of the two foolish imbecile words "fifty-nine" and "QRZ". Where is the responsibility of the coordinators of the national radio societies and organisations for a halfway civilised communication? Hopefully qualified hams with new ideas will be sort out to serve amateur interests in the sense of a better future of A.R_ and who make a stand against destructive contests.

Bernd W. von Bojan, DJ7YE, Roetgen, Germany

The struggle of Mazda and Ahriman

I thank you for including my contribution Morse and Mazdaism, in the February edition.

Unfortunately, Zoroastrian got mangled and my callsign VK2BN became VK2EN.

The letter had been prompted by the infuriatingly tautological and judgementally distorted outpouring of Ian Gray.

Zoroastrianism is based on the concept of a continuous struggle between Mazda, the God of Creation, Light and goodness and his archenemy. Ahriman, the spirit of evil and darkness.

If we really think about the many means of communicating by Morse Code and some of the simplest ways of exploiting, it, eg, sound, rf, light, in times of emergency. Surely, it is not too much to ask of us some return for spectrum occupied by amateurs by demonstrating our steadfastness and application to a skill peripherally attached to the art we strive to achieve.

It is clearly not a struggle between the spirit of evil and darkness portrayed by Morse abolitionists nor the God of creation, light and goodness they see in its abolition.

I suggest we contemplate the origin of the ARRL and adjust our perspectives accordingly.

Fred Smith
VK2BN/VK2ACP

Editor's note The misspelling of Zoroastrian was a mistake by a new optical character recognition system. Neither it nor the typesetter were around in the Avesta; neither made the connection

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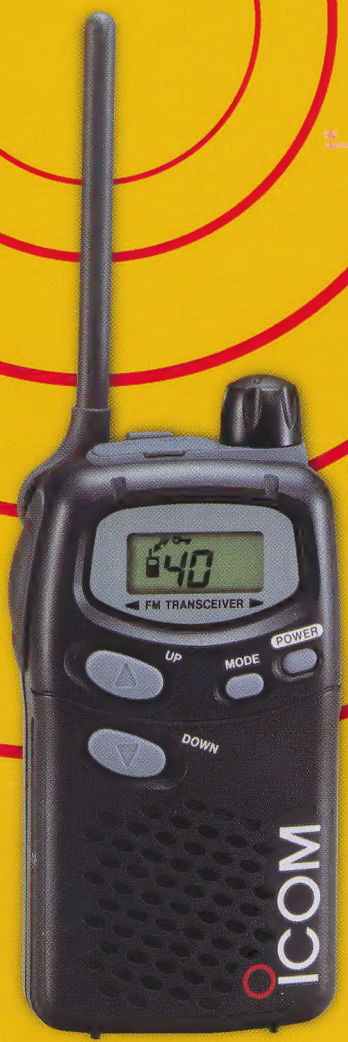
Volume 69 Number 5 MAY 2001



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